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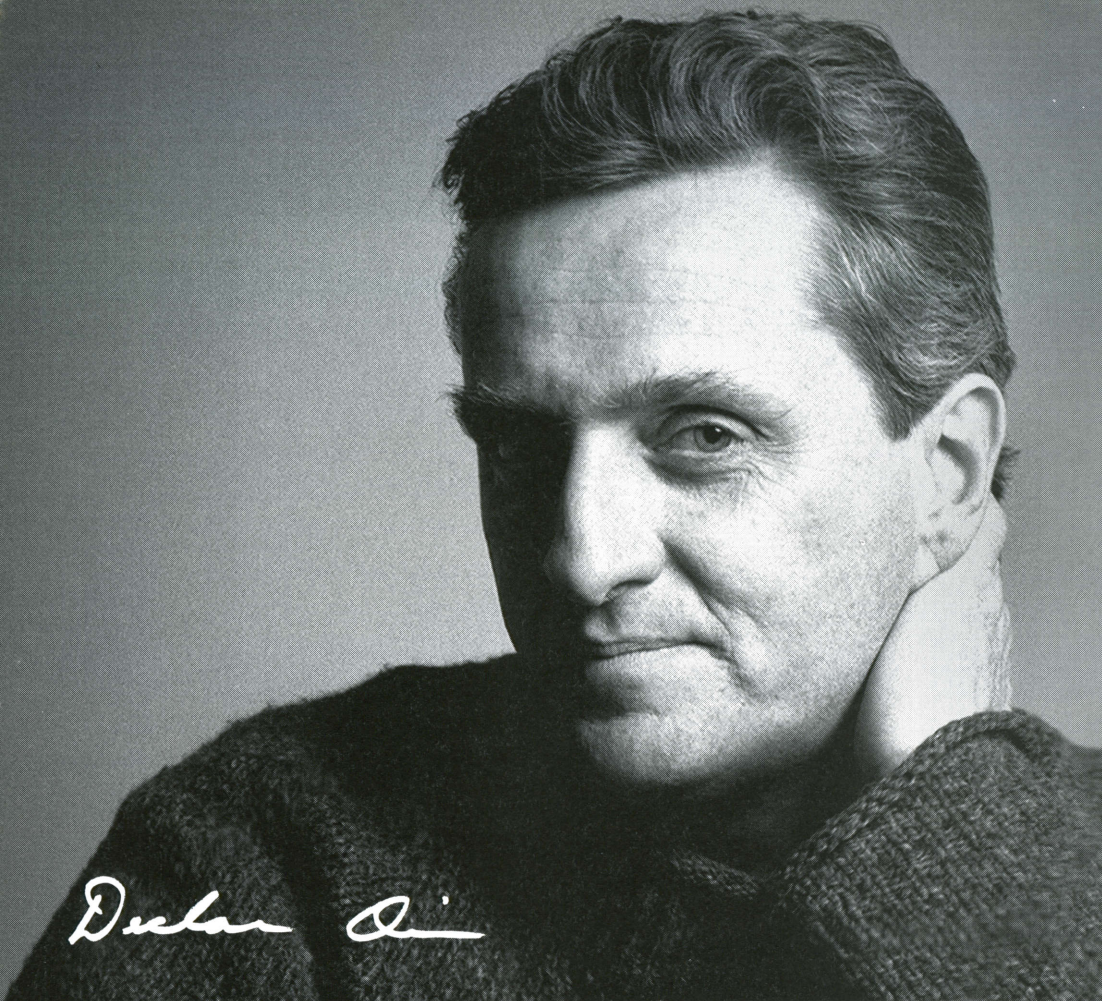
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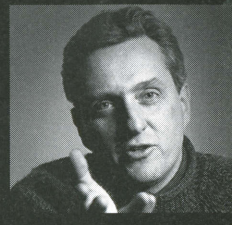
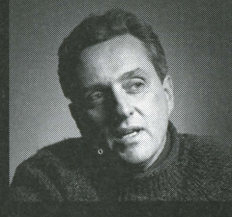
ONFILM

"I started shooting music videos at a company in Ireland where we had license to experiment. Combining music with pure imagery was a new opportunity to evoke emotional responses—to create a mood for the viewer. Like most cinematographers, I'm a student at heart. That's why I keep moving between features, commercials, music videos and occasional documentaries. Each discipline teaches me different things. Documentaries teach me to be spontaneous, and commercials and videos allow me to test ideas and push them a little further. There's a boyish excitement that goes with our job. It's like being a magician who is always playing with illusion."

Declan Quinn's narrative credits include *Freddy's Dead: The Final Nightmare*, *The Ballad of Little Jo*, *Leaving Las Vegas*, *Kama Sutra: A Tale of Love*, *This Is My Father*, *One True Thing*, *28 Days* and *Monsoon Wedding*.

All these films were shot on Kodak motion picture film.

For an in depth interview with Declan Quinn, visit the Kodak website at www.kodak.com/go/onfilm



American Cinematographer

The International Journal of Film & Digital Production Techniques

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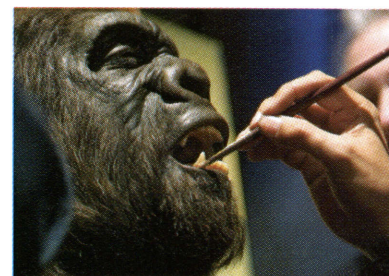
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On Our Cover: A gorilla general (Michael Clarke Duncan) prepares for battle in *Planet of the Apes*, directed by Tim Burton and shot by Philippe Rousselot, ASC, AFC (photo by Sam Emerson, courtesy of 20th Century Fox).

Contributing Writers:

Stephanie Argy
Jay Holben
Nora Lee
David E. Williams

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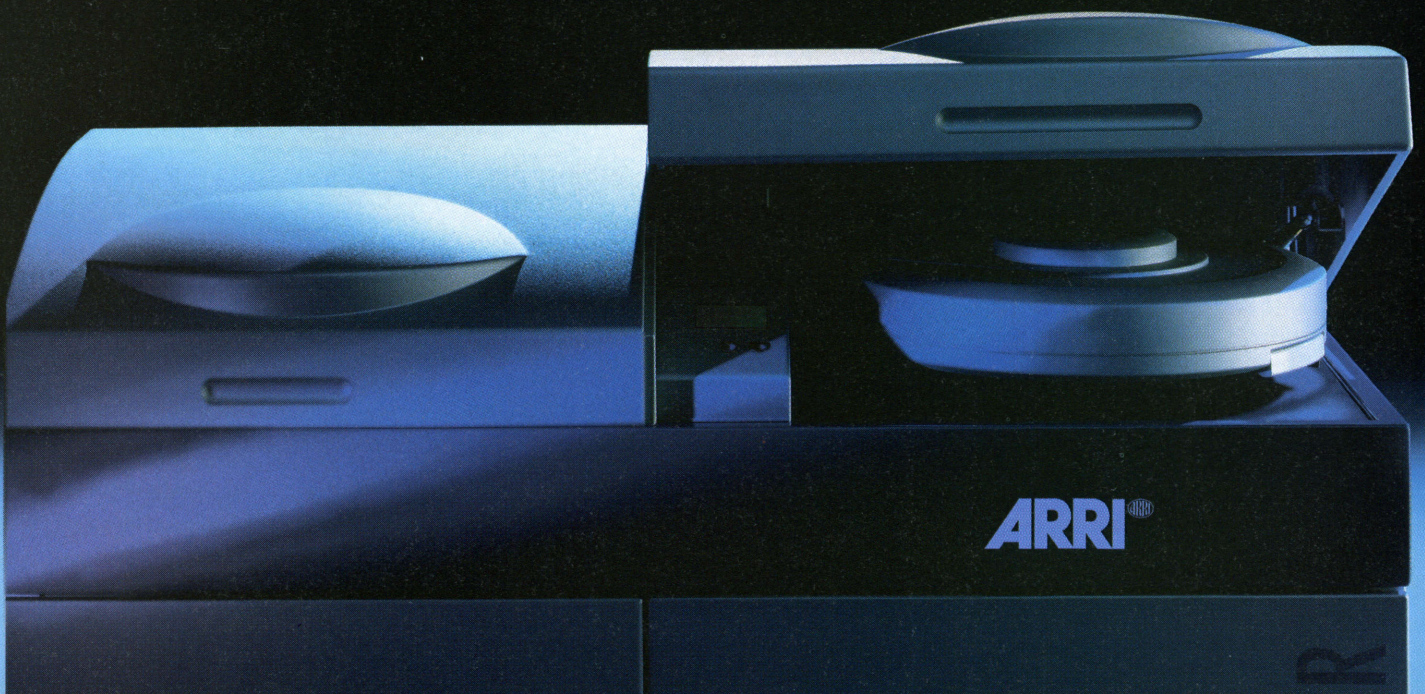
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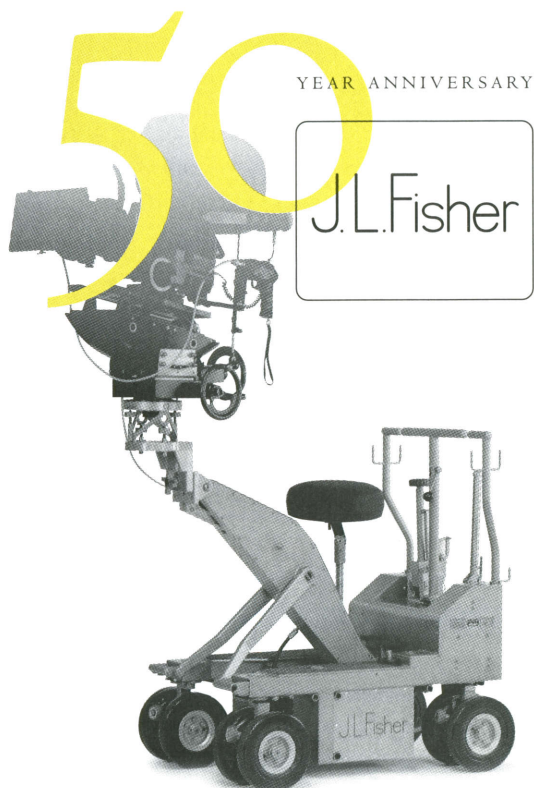
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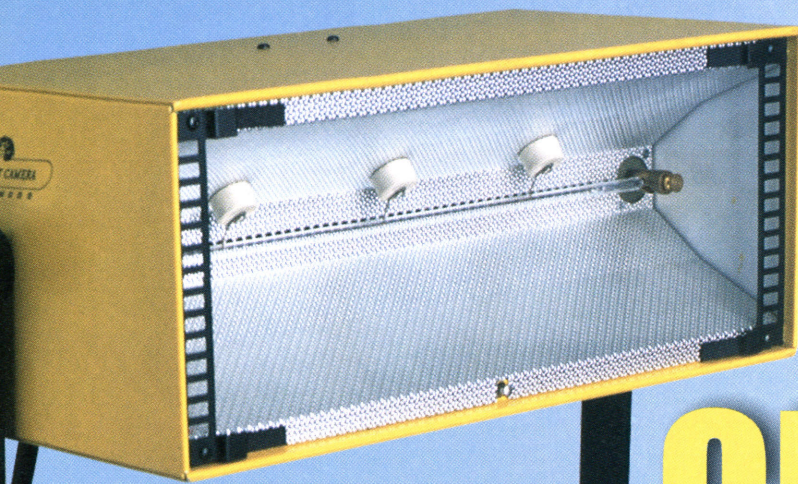
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Every now and then we like to remind cinematographers, directors and producers about the advantages of using Clairmont strobes. For capturing dynamic action shots, highlighting motion and working with food... our exclusive compact design, cool strobes are the answer.

Proven Time After Time

But don't just take our word for it. Noted Director of Photography Gary Manske says, "I have used Clairmont strobes on dozens of commercials in a variety of ways. This has included capturing extreme action in toy spots, to enhancing the beauty of liquid on food shots. I most recently used them for an ice cream commercial which featured small candies being dropped on top of a scoop. The Clairmont strobes not only captured the beautiful details, they gave me a low temperature light source to keep the ice cream cold. And on a practical note, the Clairmont strobes are also very reliable and easy to set up. This is always a plus in today's fast paced commercial world!"

Convenient 120v AC Power!

One important reason why Clairmont strobes are so versatile and easy-to-use is that they require only a standard household 120v AC power source. This lets you shoot in virtually any location, and not be limited to using sets on a 220v sound stage or industrial environment.

Works With Most Cameras

Another key factor is that Clairmont strobes can be used with virtually any modern camera; Aaton, Arriflex, Fries/Mitchell, Moviecam —even Panavision. And they can be synchronized with any speed from 4 to 150 fps.

No Special Technicians

Best of all, standard crews can handle the strobes. You don't need any special technicians. The compact 17" wide by 7" tall heads are easily positioned by the cinematographer, with the lighting effect previewed through the camera. Not only does this save money, but you won't have to listen to some guy tell you how to do your job!

Save Up To 30% More!

In addition to not needing to hire a "specialist" to operate lighting, there are other economic advantages to using Clairmont strobes. Like not needing special high speed cameras that "eat" film to sharpen action, and being able to rent Clairmont strobes at very competitive prices. What's more, we've found a three-head Clairmont package to be renting for about 30% less than the competition.

Dramatic Action Is Easier With Strobes

Lightweight and Powerful

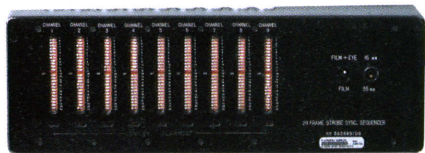
Each Clairmont strobe puts out 100 foot-candles at 4 feet. If you need more lighting, the compact 17" x 7" heads can easily be gaffer-taped together. A 400-foot-candle source measures only 34" x 14" (or you can configure it 28" x 17"). Using tape to link heads—or attach gels—is no problem, since the strobes run cool. What's more, each head weighs only 10 lbs., so a 4-head bank is only 40 lbs. That's substantially lighter than any competitor's package.

Control The Temperature

If you're shooting food, you need strobes. Regular "hot" lights will most assuredly wilt lettuce, melt ice cream and have an effect on steam, condensation, etc. With strobes, conditions are easier to control.

24 Frame Strobe Sequencer

With nine available channels, you can hook up many strobe power packs—and more than one strobe head on each channel by connecting power packs. There are 24 DIP switches per channel, which control the flash per frame. Flash on one or multiple frames per second.



Control The Light

Using Clairmont's Preview Box you can check your setups without running the camera. It's set at 61 fps so the strobe flashes will almost look like regular AC light. You can set the heads to get the desired lighting effect. And there's a Low Power switch on each strobe Powerpack that reduces output one stop. Color Temperature is 7000° K.



In Sync

The Sync Box automatically relays timing signals from the camera. You can capture input from multiple cameras and synchronize them with the strobe pack(s).



Rapid Pulse and Recycle

Clairmont Strobes have an exposure time of 1/50,000th—substantially less time than the shutter is open. This pulse flash, along with your T-stop, set the exposure. You can maintain the same T-stop and exposure level while varying camera speeds because Clairmont Strobes have a very rapid flash recycle time. Speeds of up to 150 frames-per-second are fine.

It All Adds Up

We believe there's not a more compact, reliable, easy-to-use and more controllable strobe unit on the market. You won't find a more versatile package and better value than renting Clairmont Strobes.

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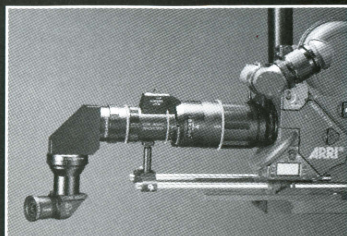
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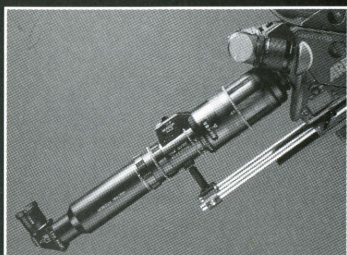
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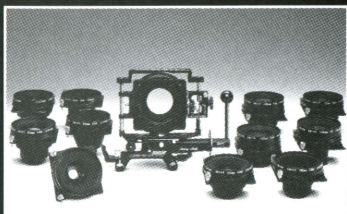
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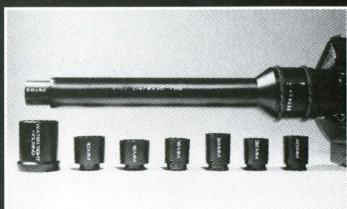
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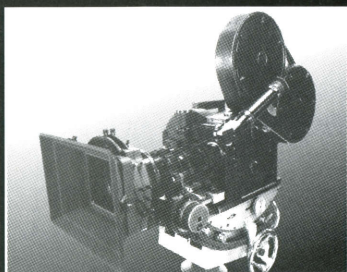


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Editor's Note



It's been more than 30 years since churlish astronaut George Taylor — embodied by granite-jawed actor Charlton Heston — found himself stranded on a strange planet occupied by a race of intelligent simians blessed with the power of speech. Declaring the place "a madhouse" and cursing its "bloody baboons," Taylor set his sights on escape, only to be thwarted by one of cinema's greatest surprise endings. The film was 1968's *Planet of the Apes*, and it became one of sci-fi's most beloved classics, spawning four motion-picture sequels and two television shows.

With the new millennium underway, the time is ripe for a new version of *Apes*. Director Tim Burton and cinematographer Philippe Rousselot, ASC, AFC have tackled the challenge with gusto, using modern methods to retell the story laid down in author Pierre Boulle's 1963 novel. To get the inside story on this hairy undertaking, *AC* dispatched veteran writers David E. Williams ("Antisocial Darwinism," page 26) and Ron Magid ("Shipshape Effects," page 36, and "Monkey Man," page 52).

Rush Hour 2 ("Feats of Flexibility," page 42) is another film that lends a new twist to a successful predecessor. Determined to up the ante after helming the initial 1998 action hit, director Brett Ratner asked cinematographer Matthew Leonetti, ASC to help him throw more obstacles at mismatched detective partners Lee and Carter, who now find themselves ranging from Las Vegas to Hong Kong in hot pursuit of the man who killed Lee's father. As the saying goes, this time it's personal.

This month's issue also examines some of the summer's most striking visual effects. In addition to our articles on the effects work for *Apes*, we also explore some of the technical advances that added pizzazz to *A.I.* ("Views of the Future," page 60), *Pearl Harbor* ("Allied Powers," page 68), *Driven* ("Eyes on the Prize," page 75) and *Cats & Dogs* ("Peeved Pets," page 77).

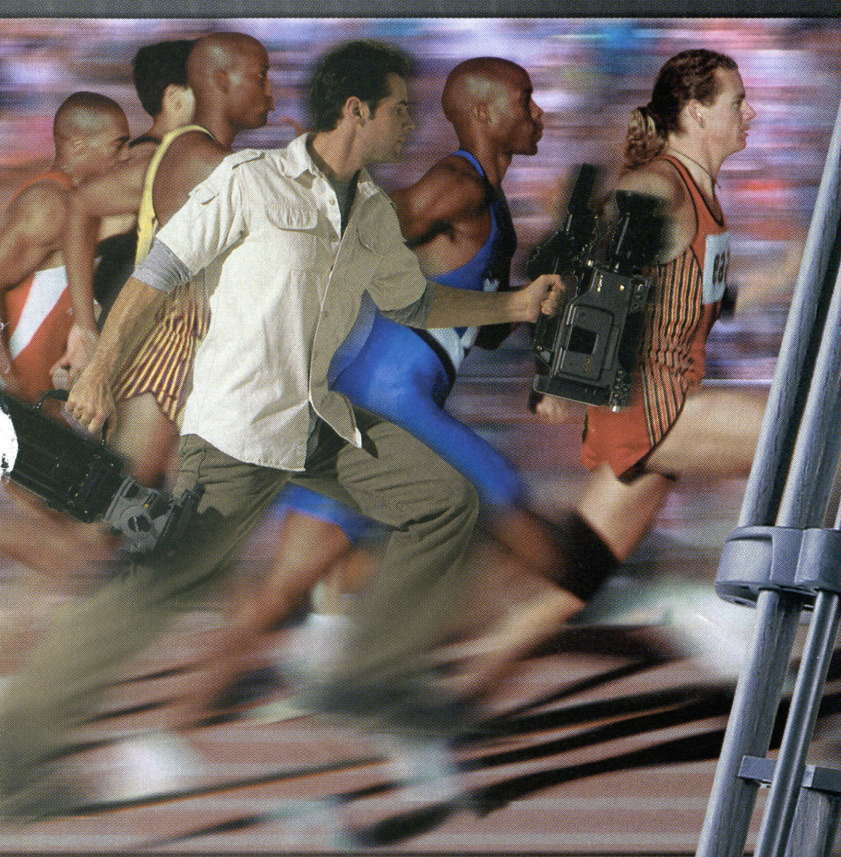
Another advance is discussed in "Exploring a New Dimension" (page 80), which presents an overview of a new high-definition 3-D camera rig from Paradise F/X, a subsidiary of Cobalt Entertainment Technologies. This new, lightweight rig houses two Sony 24p HD900 cameras that can be used to create stereoscopic images in a variety of formats. While more traditional 3-D techniques still have their adherents, this hi-def alternative is a new tool that offers large-format filmmakers a glimpse of a freer and less-cumbersome future.

Sincerely,

A handwritten signature in black ink, reading "Stephen Pizzello".

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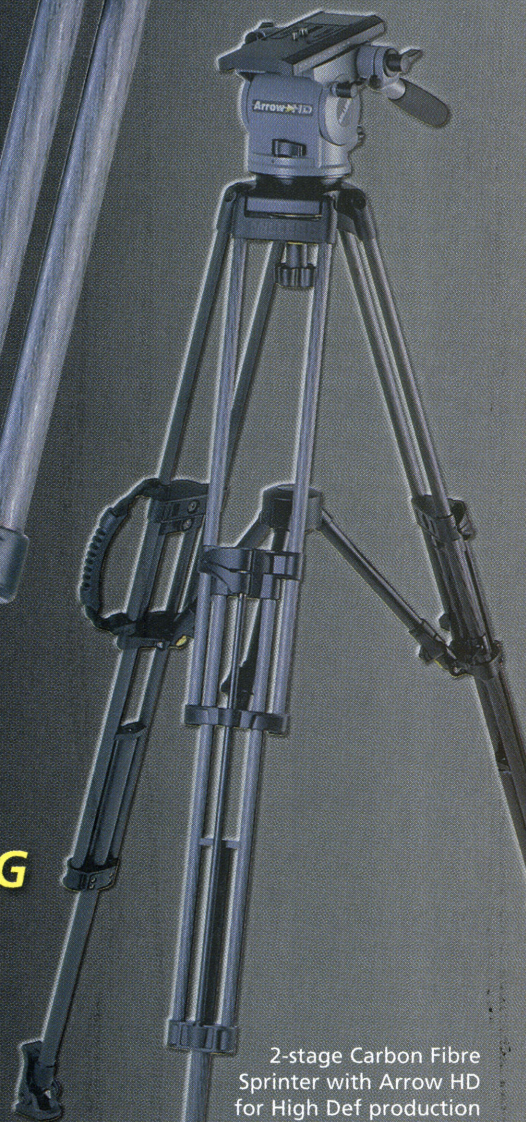
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DVD Playback

by Chris Pizzello

***The Seven Samurai* (1954)**
1.33:1, Dolby Digital Mono
The Criterion Collection, \$39.95

A longtime fixture on many critics' 10-best-of-all-time lists, Akira Kurosawa's *The Seven Samurai* is perhaps the ultimate example of cinematic form matching content. The aural motif of a horse's hoofbeats, the precise placement of a wind effect, even the type of dissolve used to link one scene to another — every detail in this epic is there for a sound narrative or thematic reason. While Kurosawa's rigorous direction has been pored over obsessively by film scholars for years, the real revelation in viewing the film today is how much of a relentless crowd-pleaser it remains. The film's classic story design — a group of disparate outsiders banding together to pull off a seemingly impossible mission — has been plundered for years by other films, from *The Dirty Dozen* to (gulp) *Armageddon*.

Photographed by Asakazu Nakai, *The Seven Samurai* remains an extremely innovative work of cinematography. Kurosawa's unique strategy of filming scenes with multiple cameras allowed him to make striking and unconventional editing choices, while his near-constant use of deep focus meant that day scenes were often flooded with as much light as other directors' night scenes. The many beautiful frames composed by Kurosawa and Nakai are almost incidental, so determined was Kurosawa to pare each shot to its essential story value.

The Criterion Collection transferred *The Seven Samurai* from a new 35mm composite low-contrast print, and the results are better than the viewer has a right to expect from a film that's nearly half a century old. Age artifacts have been greatly reduced (though not by any

means eliminated), while sharpness is generally good and blacks admirably robust considering the condition of the source materials.

Besides the original U.S. theatrical trailer, the only supplement included on the disc is a scholarly frame-by-frame commentary by Japanese film expert Michael Jeck, which was recorded for a Criterion laserdisc in 1988. The effect is comparable to the precise play-by-play of a championship game by a top-of-the-line sports announcer. Jeck explains in detail his claim that *The Seven Samurai* is the "ultimate auteurist picture." Each artistic decision made by Kurosawa throughout the film is highlighted, from the thematic meanings of the various kinds of weather to the carefully distanced, "third-person omniscient" point of view employed to tell the tale. This high-minded audio track is a refreshing change from the in-jokes and set stories that often dominate DVD audio commentaries, and hopefully we'll see more DVD commentaries from other perceptive film scholars and critics.

***The Magnificent Seven* (1960)**
2.35:1 (16x9 Enhanced),
Dolby Digital 5.1
MGM Home Video, \$19.98

The inevitable American remake of *The Seven Samurai* into a rip-roaring Western yarn was one of those all-too-rare occasions when Hollywood did some justice to the original. While certainly not the overwhelming artistic achievement that Kurosawa's film was, director John Sturges' Western retains the emphasis on character — each of the seven gunslingers has at least one great scene — while also carrying over *The Seven Samurai*'s sober reflections on the cost of being a warrior. Perhaps the ultimate tribute to *The Magnificent*

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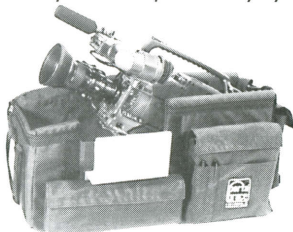
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Seven was the ringing endorsement of the picture by Kurosawa himself.

The Magnificent Seven was photographed by Charles Lang, ASC, who was initially a surprising choice to shoot the Western because of his reputation as one of the supreme photographers of women in Hollywood. Sturges ignored the naysayers by pointing to the many other types of films Lang had shot as a versatile studio cameraman. The DVD transfer of Lang's precisely composed images is rock-solid — colors are well-saturated and blacks are strong, while grain and age artifacts are barely noticeable.

The Magnificent Seven is a fun film, and this DVD has been produced with the proper lightness of spirit. A brisk and entertaining new documentary on the making of the film is rife with amusing stories of the one-upsmanship between star Yul Brynner and supporting player Steve McQueen. The young and ambitious McQueen never missed a chance to upstage the stoic Brynner by improvising gestures whenever the star's back was turned, a development that Sturges relished.

Also included is a genial commentary among four of *The Magnificent Seven's* principals: executive producer Walter Mirisch, assistant director Robert Relyea, and cast members James Coburn and Eli Wallach. A photo gallery, the film's original theatrical trailer and a collectible booklet make this disc a very good value at \$19.98. *AC* readers should also note that the late John Alonzo, ASC, who got his start as an actor before finding his true niche behind the camera, plays the Mexican villager Miguel.

***Crouching Tiger, Hidden Dragon* (2000)**
2.35:1 (16x9 Enhanced),
Dolby Digital 5.1
and Dolby Surround 2.0
Columbia TriStar Home Video,
\$27.96

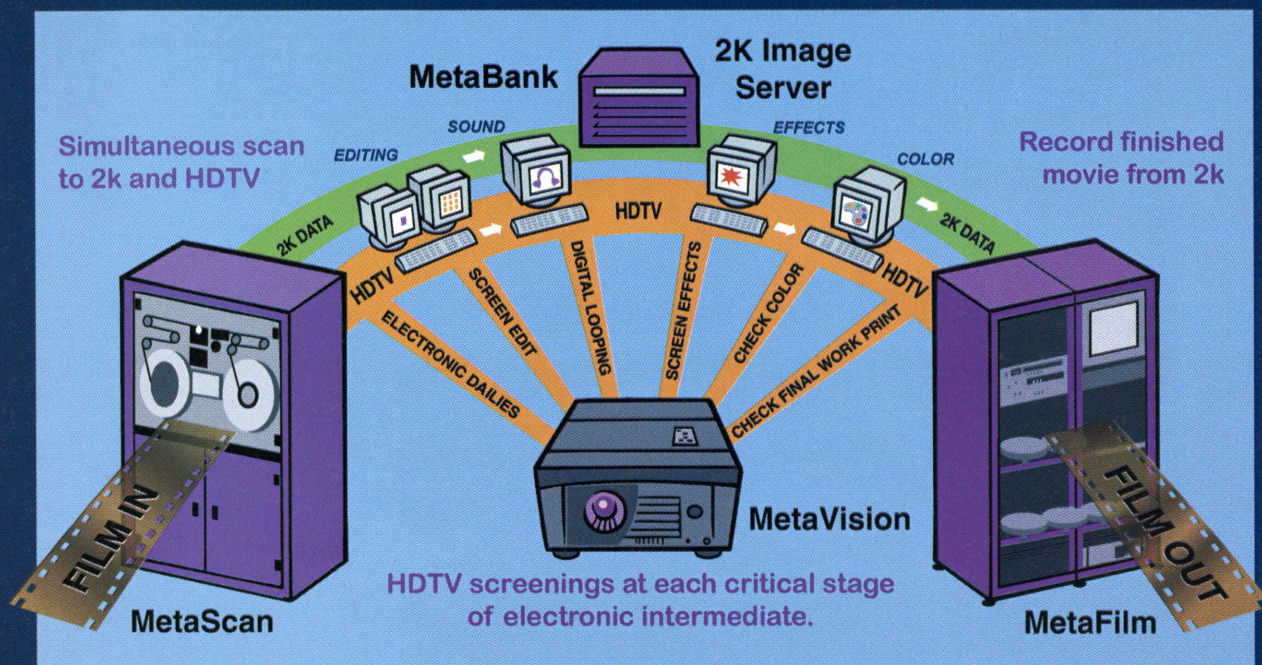
The warrior spirit is given a modern, female-empowered spin in Ang Lee's *Crouching Tiger, Hidden Dragon*, an imaginative and beautiful film that

brought a long-dormant sense of wonder back to moviegoers. The key to the film's visual magic, Lee says in his audio commentary, was to approach the film more like a musical than a standard, beat-'em-up martial-arts film. The Chinese warriors of *Crouching Tiger* do indeed seem to be *dancing* as they sprint up walls, leap from roof to roof and literally fly through forests — but the truly amazing achievement is that none of this seems ridiculous in the slightest, so seamlessly has Lee engulfed the viewer in *Crouching Tiger's* mythical world.

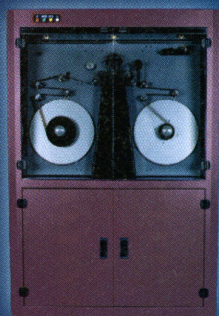
Veteran Hong Kong cinematographer Peter Pau, HKSC (*The Bride With White Hair*) was awarded the Oscar for his tasteful, desaturated cinematography in *Crouching Tiger*, which is presented in a near-flawless transfer on this DVD. Lee notes in his commentary that Pau had to constantly adapt his lighting design to the needs of famed martial-arts choreographer Yuen Wo Ping (*The Matrix*); the spontaneous, guerrilla-style filmmaking employed for *Crouching Tiger* must have been a logistical nightmare for Pau. Joining Lee in his commentary is his longtime producer (and one of *Crouching Tiger's* co-writers) James Schamus, a wise-cracking fellow who never misses a chance to needle the good-humored Lee. Their commentary is especially useful in shedding light on some of the Eastern customs and attitudes — such as the whole concept of having a "master" and what it entails — that may have provoked the occasional scratch of the head by Western audience members.

Also included on the disc is a short but entertaining making-of documentary that allows a few glimpses of the incredibly exacting wire work that allowed the performers to take flight, as well as an interview with cast member and martial-arts film veteran Michelle Yeoh, who describes the hellish surgery she endured after a freak knee injury on the set. Rounding out this package are a montage of set photos cut to music, trailers, filmographies and production notes. Western viewers who simply can't tolerate subtitles also have the option of watching the film in an awkward, English-dubbed format. ■

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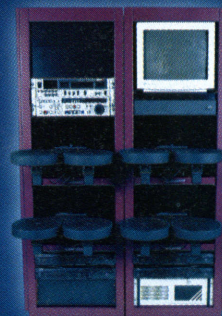
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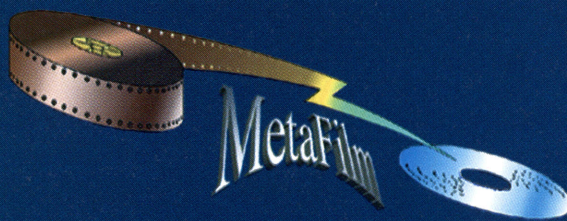
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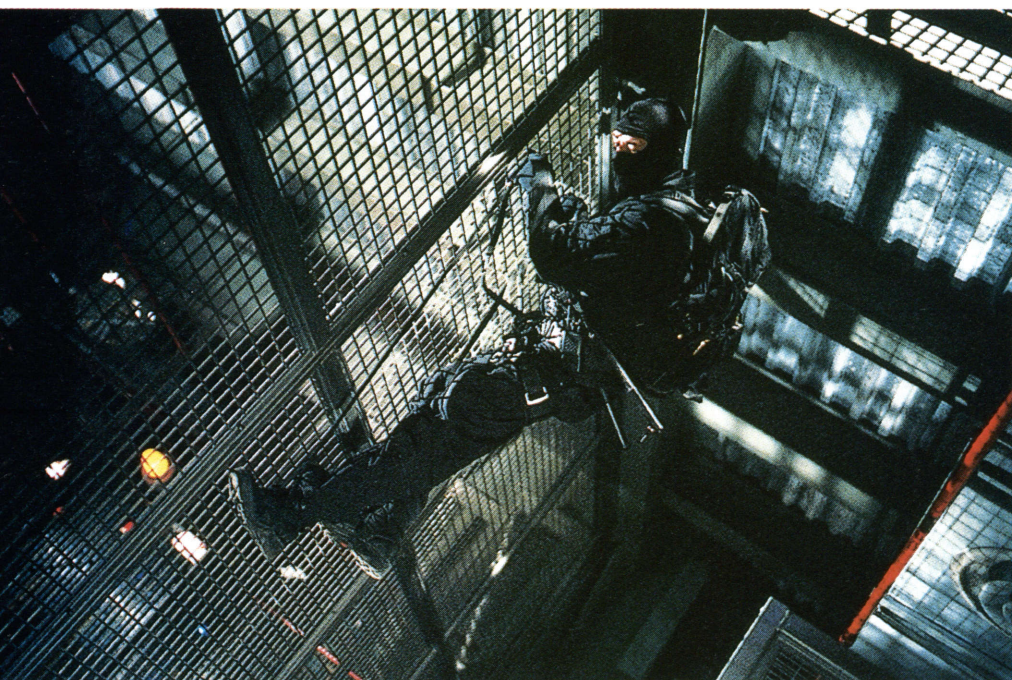


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Production Slate

Old Pros and Young Lovers



In a departure from the lighting scheme used throughout *The Score*, cinematographer Rob Hahn lit the scene of the crime with more light so that Nick (Robert De Niro) would have no place to hide. He also used very smooth camera coverage, explaining, "Director Frank Oz and I decided that it would be wrong to shoot Nick climbing up the cage handheld. It would have detracted from Nick's very careful movements."

One Last Score by Douglas Bankston

You've seen it before: a legendary cat burglar decides to pull one last heist before calling it quits. Such is the case in Paramount Pictures' new thriller *The Score*, but this film stands out from the numerous others with this tried-and-true formula because of a historic footnote: Marlon Brando, Robert De Niro and Edward Norton, three distinguished actors of their respective generations, appear together onscreen for the first time.

De Niro plays low-key jazz club owner Nick Wells, who happens to moonlight as a master thief, and Brando plays jovial Max Baron, his longtime confidante and fence for stolen goods. Nick is ready to go legit, but Max needles him into conducting one last caper in the

basement of the Montreal Customs House, where a French national treasure, a golden scepter, resides. Enter Norton as Jackie Teller, also known as Brian, the mentally retarded janitor for the Customs House — the man on the inside. Greed is a powerful motivator, however, so the question of who will double-cross whom hangs in the air.

Nudging this film and its quirky characters further to the forefront of its genre are noted director Frank Oz and cinematographer Rob Hahn, who had previously teamed up for the 1997 comedy *In & Out*. Whereas that film was bright and airy, *The Score* takes the opposite tack. "I would describe it as a chiaroscuro or film-noir look," offers Hahn. "It's very dark and stylized, and not necessarily real. I kept trying to push the darkness part of it because I wanted it to be mysterious, and I didn't want

you to know what the characters were thinking because any of them could be implicated."

In capturing the three heavy-weight actors onscreen, the filmmakers opted to shoot in the anamorphic format. "I love that canvas," says Hahn, who is very familiar with the format after operating for Owen Roizman, ASC, a big fan of anamorphic, for nearly 20 years. "We didn't want to be safe on this movie; we wanted to take risks and push each other. It is a character-driven thriller, and we wanted to use these three great actors in the same frame at the same time. We used the anamorphic frame to do that, to give equal weight to each while you're trying to decide who's going to screw whom."

The filmmakers took full advantage of the wide frame. For example, in one scene where Nick talks about giving up thievery while cooking dinner in his apartment for his girlfriend, Diane (Angela Bassett), the two characters are placed at the extreme opposite sides of the frame in a proscenium-type shot to convey emotional distance. Through careful framing, Hahn also used the frame width to create a sense of depth, as in a scene where Nick and Jackie are sitting in a car. "Instead of doing normal coverage," explains the cinematographer, "we shot it from one angle with both of the guys in profile — Edward on the left side of the frame and Bob on the right. Bob is talking [on a cell phone] to a hacker who is playing loud music, and Bob is telling him to turn it down. Then we just racked focus. Bob goes out of focus, and you see Edward at the edge of the frame, shaking his head. You could just see his eyes and nose. It felt like we should play with the frame and make it

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Near right: Hahn's illuminating sleight of hand was accomplished with numerous mirrors that reflected light, usually from one source unit. The reflected light was heavily flagged and cut to cast points of light on actors, objects and walls. The liberal use of smoke completed the lighting style. Far right: Hahn, seen here double-checking his framing, knew the anamorphic format was the natural choice for a film featuring Robert De Niro, Marlon Brando and Edward Norton.



as visually interesting as possible."

The anamorphic format tends to have a thirst for light, and complicating the lighting setups on *The Score* was the frequent use of two cameras: a Panavision Platinum in the A-camera role and a Gold II as the B. Both were outfitted with unfiltered Primo lenses. For most handheld and Steadicam work, C-series lenses were substituted. "For the first scene with De Niro and Brando, I was informed that I had to light all the coverage simultaneously, which I had to do for the entire movie," Hahn reveals. "Most of the close-ups and [over-the-shoulders] were done with two cameras. I hated that idea, but Bob requested it. It was the nature of the beast, because Brando and De Niro like to improvise so much. They just couldn't repeat the same take twice.

"For the first sequence between these two great actors — the first time they'd ever been in a scene together — I was given 20 minutes to light both close-ups and overs because Bob had to catch a plane," he recalls with a laugh. "Since I had a great crew, we did it, and I'm pretty pleased with the results."

Hahn's teammates included key grip Robert Baylis, dolly grip Alain Massé, best boy grip Stéphane Pilon and their crew; gaffer Jean Courteau; production designer Jackson De Govia; first AC Tony Rivetti, and A-

camera/Steadicam operator Angelo Colavecchia. "I had some fabulous grips, and the gaffer and his crew were fantastic, too," Hahn enthuses. "If I hadn't had Tony and Angelo, I wouldn't have even attempted some of the shots we made."

He is also equally fond of his working relationship with director Oz. "He's completely supportive of what you're doing," Hahn attests. "He pushes you to not play it safe, which is a fantastic thing for a cinematographer!"

Wrestling with the wide anamorphic frame and two cameras, Hahn created the crime caper's contrasty look with smoke and mirrors — literally. "I do a lot of cutting with light," he says. "I'll take one light and put it outside of a room or at the end of a tunnel, then I'll cut the hell out of it with thousands of flags. I use a lot of fingers and a lot of small mirrors that I break up into little pieces. I might have a 20K coming in through the window like in the jazz club, and I'll put a broken mirror on the ground using a flexarm. Because of the nature of a broken mirror, the light goes in all different directions, so I'll just catch some light with it and aim it where I want the light to go. Then, in front of that mirror, I'll take a bunch of cutters and cut the light very softly [i.e., with the cutter positioned closer to the mirror] as it's hitting or rimming a face.

"I like to light architecturally," he



continues, "so I can create splashes of light in places where the characters aren't. I control the contrast that way. Using smoke was a good way to create that architecture, and it served as another element in the overall composition of the scenes. I love the Impressionist painter Paul Cézanne and the way he used blocks of color to create an impression of light. I tried to emulate that a little bit. I threw in a little Jan Vermeer and Rembrandt as well."

Because of the sometimes short setup time, limited actor availability, and a constantly changing script, Hahn's choice of lighting style might seem adversely complex and time-consuming. But to the contrary, he reveals that it was "actually very quick, because after you get a good position on your main unit, you aim it where you want it to go. Then, as Conrad Hall [ASC] used to tell me, you 'gather chestnuts' — you pick up the light where you can find it.

"A lot of times there wouldn't be any lights at all on the set floor," he details. "In Nick's apartment, I'd have 5Ks and 10Ks outside the window streaming in, and I'd cut them the way I wanted. Then I would use mirrors to pick up light if I wanted to accent a flower vase or put a little light in a dark corner. Another thing I made sure of with the production designer was that all walls were dark. By keeping the walls dark, I was able to control the contrast between the actors and the objects they were against."

A very close inspection of the apartment setup reveals skylights that vary from shot to shot. Production designer De Govia designed a system of sectional panels that could be removed from the ceiling as needed for lighting

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Near right: In an unfinished basement poolroom, Max (Marlon Brando) begs Nick to stay on the job. Hahn used numerous mirrors and flags to cast patterns onto the walls and actors. Far right: Inside man Jackie (Edward Norton), masquerading as a mentally retarded janitor, checks out the Customs House security system. Hahn used grids to cast patterns onto set walls.



purposes. "I don't obsess over matching," Hahn says. "I don't think light has to always be motivated. I believe that limits you, and I don't think the audience cares. I think it's okay to be stylistic if it's right for the emotion of the story. My theory is that there's nothing wrong with giving the audience something interesting to look at."

One location that didn't have the required dark walls, however, was the unfinished white and light-blue basement poolroom in Max's mansion. Max, whose funds have dried up, is sitting in an empty hot tub next to the uncompleted pool, nursing a bottle of champagne, when Nick pays a visit. The setup was a prime example of Hahn's smoke-and-broken-mirrors philosophy.

"If you saw a still picture of the bottom of the pool, you'd see a thousand pieces of broken mirrors and flags hitting patterns onto the wall," reveals the cinematographer, who thankfully isn't very superstitious. "I used a lot of smoke in that pool. I put two Par lights outside, shining in as beams that hit the bottom of the pool and my mirrors. I had a separate light on Marlon and a light on Bob from outside that I cut with flags and fingers, like all of the other lights. On Bob's shot we had a very hot window in the background that I kept hot. I used some patterns on the wall on the left side of the frame to create a [symmetrical] composition with Bob, who was on the far right side of the frame. I kept his

face very dark. Since [the location] was a very white area, I had to do a lot of cutting in the pool to keep the dark areas I wanted. I exposed at a deeper stop, I think a T4, so I could crunch the blacks a little bit. I hardly ever filled at all."

Hahn generally gathered enough chestnuts to expose his Kodak Vision 500T 5279 (for interiors) and EXR 100T 5248 (for exteriors) at T3; the stocks were processed normally. "I usually overexpose and print down," he says. "This time I didn't overexpose as much. Instead, I kept a generic stop, and I made sure that I had something very hot somewhere in the frame. That's the trick to having dark photography: you have to expose areas to light to get black. I tried not to fight the natural contrast of the lenses and the stock, but instead let them work for me."

To monitor his contrast, Hahn paid special attention to the dailies processed at Deluxe in Toronto, and had them reprinted when he felt they weren't spot-on. "I felt if I could get the workprint to look as close to an answer print as possible, I could just say 'Match this' during timing," he notes. "Generally, I printed down for the highlights. We picked up a little contrast when we went to the internegative, which I liked."

In stark contrast to the contrasty style, Hahn photographed the swiping of the scepter in the cluttered Customs House basement in a slightly brighter, more open light. "I felt it was a little

more dangerous if it was brighter," he explains. "That way you'd wonder whether [the thief] is going to be seen. That's why I lit the safe so brightly. It creates another barrier, and we felt the more barriers we had, the scarier. I felt that way about the lighting, too. It's like the *North by Northwest* crop-dusting scene, which takes place in the middle of the day in bright sunlight — it's the last place you expect a suspenseful sequence to happen. I thought about that while we were shooting. I tried to use colored lights, blues and ambers, in the background so that I had some color in the frame when they were out of focus. When I look at it now, [I think] I should have turned off a few lights for some of the wide shots, because I think some of those got a little busy. It was a very difficult setup."

Even though the lack of a locked script caused a significant amount of uncertainty at times, Hahn came away from *The Score* thrilled with the experience, and he notes that even the most jaded crewmembers knew they were working on something special. "It was the most fun I've ever had working on a film because it was so creatively involving," he declares. "The whole experience was like being in a jazz ensemble, [with everyone] sort of riffing off each other. I even contributed a few lines to the movie. The last thing one of the characters says, 'Okay, bye-bye,' was my idea!"

Crazy Colors

by Christopher Probst

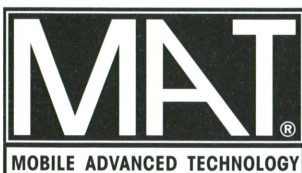
When cinematographer Shane Hurlbut teamed with director John Stockwell for the coming-of-age feature *crazy/beautiful*, the duo was determined to break the mold of standard teen fare. Employing the popular theme of "love against the odds," the film tracks the romance that blossoms between Nicole (Kirsten Dunst), the troubled daughter of a congressman, and Carlos (Jay Hernandez), an ambitious Latino teen trying to break free from the constraints of his more modest upbringing.

"*crazy/beautiful* is a dramatic piece that deals with themes like family problems, racism, alcohol, sex and drugs," notes Hurlbut. "I found that it had many more elements than your standard teen movie. When I read a script for the first time, I start to think about how I might possibly shoot the film. I write down ideas, and then pull reference materials from magazines and photo books and put together a [visual] package. When I interview for a film, I bind all of these ideas together into a reference book that represents the lighting style I'm [considering,] the tone of the film, and maybe some shot representations showing particular framing and compositions.

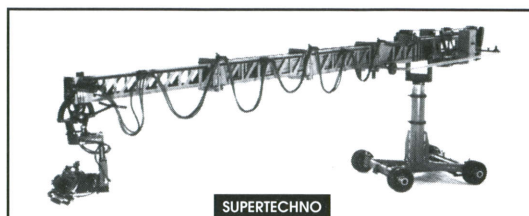
"After meeting with John and hearing his ideas for *crazy/beautiful*," he continues, "we scouted the locations we were going to be shooting. We brought along two stand-ins, a Latino boy for Carlos and a Caucasian girl representing Nicole, and photographed them in those environments with a digital camera using the available light. Then, using the Panavision/Kodak PreView System, I took those reference photos and manipulated them on the computer to see how the natural light fell on the actors' faces. I made sure we scouted every location at the times that we were going to be shooting there — if we knew we were going to shoot a scene at night, we scouted that location at night. I took a monopod along so that I could hold the camera for long exposures and capture the feel of the light that was there.

Photo by Will McGarry, courtesy of Touchstone Pictures. Test photo courtesy of Shane Hurlbut.

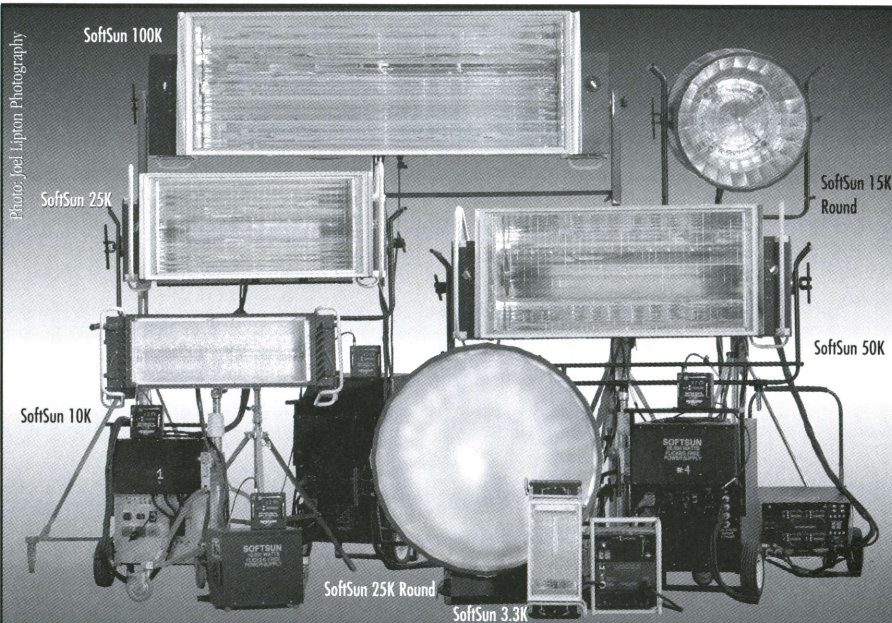
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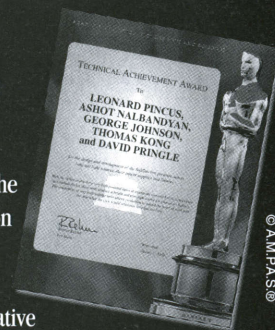
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crazy/beautiful chronicles the unlikely romance between the bright and ambitious Carlos (Jay Hernandez) and the privileged, rebellious Nicole (Kirsten Dunst).

"John really responded to how the light in these locations was slightly imperfect," Hurlbut continues. "He wanted this film to feel like you were there, experiencing it just as the characters were. I felt the best way to achieve that sense of realism was to first see what light was already present, and then merely add to that."

In particular, Stockwell responded to reference photos that were taken in indirect skylight and timed to be slightly desaturated and cool. "When I printed those shots down, the scene felt like it had been shot at twilight," Hurlbut recalls. "Or, depending on the density, the indirect skylight could feel overcast. By using the PreView System, I could sit at the computer with the director and design the looks for the film. John could see the changes and pick what he liked, and we could then lock that look in and print it out."

Hurlbut and Stockwell spent a lot of time discussing how to visually represent Nicole and Carlos's disparate worlds. "She lives in an all-glass house with an ocean view in Malibu and has a very privileged life, and I saw her world as very blue-white and sterile," the cameraman explains. "Carlos, on the other hand, lives in Boyle Heights [near downtown Los Angeles], so his world is darker, more blue-green and raw, very urban. But John didn't want something as delineated as having Carlos's world all

blue and Nicole's world timed warm. He was more interested in achieving the different looks through production design and lighting.

"In the color timing, for instance, we decided to create their environments as almost the same in terms of coloring, but through the production design and fill levels we were able to really differentiate them. In the timing, we played a lot with introducing a little cyan; we tried to get the color just so that Kirsten's skin glowed in an almost pearly feel with just a hint of flesh tone. Cyan, however, is one of the most difficult colors to maintain consistency with — when you alter the cyan, you also greatly affect density. That was the most difficult thing to keep consistent in the dailies."

Hurlbut recalls that the PreView System was especially valuable in communicating with studio executives. "We knew that the timing had to be spot-on right out of the gate, so Disney had to know where we were going with the blue and green tones. The dailies needed to be very consistent. Telling a timer 'I want it blue' simply wouldn't do — one person's blue can be another's cyan, or another's indigo. But by taking stills of the stand-ins at each location and timing them on the PreView System, I was able to put a scene-by-scene reference book together and number each of the photos. We had two books, one for me and one for the dailies timer, and for each scene

we shot, my assistants wrote down a corresponding reference photo number for the look we wanted. When the timer, Ron Scott at CFI, brought up that scene, he could look at the reference photos and time it exactly like that.

"This method was the best I have ever used in communicating a look to the director and to the lab," Hurlbut enthuses.

In devising his shooting approach, Hurlbut combined his coloring ideas with his available-light location tests to capture the natural-light essence of a location, while also extending that ambience to be within the capabilities of modern motion-picture film stocks. For scenes in Carlos's Boyle Heights neighborhood, the cinematographer wanted to capitalize on the location's existing sodium-vapor streetlights. "Working with the PreView System, I was able to use those sodium-vapor lights, which photograph very orange, and then, in the timing, take that warmth out of the foreground light while adding a touch of green. By doing that, the world around his neighborhood became a very cold blue-green, which John really liked.

"The practical streetlights were sodium-vapor, but they were only about 100 watts and gave me only a T.7 at 800 ASA," he continues. "So I then had David Pringle at Lightning Strikes design some sodium-vapor fixtures — globed with 400-watt or 1K lamps — that we could hose-clamp onto the existing streetlights. David built them within a couple of weeks, along with the photometric data. When you looked at the streetlight in camera, you couldn't tell that there was anything else up there — just nice pools of light that gave me about a T4-T5.6.

"This worked perfectly, because when a car drove down the street we didn't have to send a light a mile down the road to backlight it. Instead, the car would just drive in and out of the pools of light. When we shot in Temescal Canyon, for example, we put up 40 of those fixtures, lighting about two and a half miles. We just took putt-putt generators and ran six or eight of them off of stingers. For a scene when the charac-

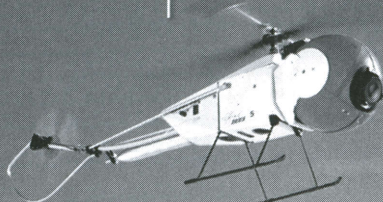
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ters ride in a jeep at night after a football game, we lit a 2 1/2-mile stretch with just those practical streetlights and a Kino Flo for fill."

Hurlbut shot all of the film's night scenes with Kodak Vision 800T 5289, rated normally. "After they leave the football game and drive downtown in a jeep with the top off, there's a whole dialogue scene. When I metered what the street-lamps were giving me downtown, I was getting anywhere from a T1 to a T1.4, and occasionally a T2 at a bright intersection. Up to that point I had been shooting the film on Primos, but for that low-light night work I switched to Panavision's converted Zeiss Superspeeds, which are a T1.4. We put the jeep on a process trailer, lowered the tires and photographed the sequence with available light.

"One of my favorite scenes is when Carlos gets pulled over by the police, and Nicole is passed out in the passenger seat," he continues. "We shot that scene in Temescal Canyon at night with only available light. We stopped the car under an existing mercury-vapor and

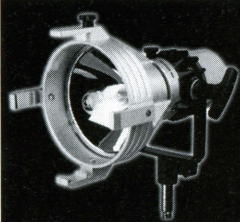
shot with the Superspeeds at a T1.4. We allowed the light from the streetlamps, the police searchlight and the police flashlights to play naturally. It was great the way the light panned across Carlos's face and the flashlights flared the lens. I didn't fill [Carlos and Nicole] because I knew the flares would be so intense that they'd act as my fill. All of the flaring going on inside the lens filled in the shadow areas so that you actually see into them even though it's pitch-black inside the car. When Nicole gets out of the car, we positioned the searchlight so that as she struggles with the officers, we'd get the light occasionally flaring right down the lens, which made it feel very real. The camera crew did an amazing job of pulling focus and following Kirsten during that scene."

The daylight and interior scenes in *crazy/beautiful* were all photographed on Vision 320T 5277 with Panavision's Primo prime and zoom lenses. "We wanted to desaturate the colors somewhat, and while 77 has a softer contrast and color palette, it doesn't have the

same sense of starkness that a stock like [Vision 200T] 5274 does. However, if you overexpose the film a stop or two, it gives the 77 that contrast and edginess back.

"For example, for scenes at the teens' school in Pacific Palisades, we decided to overexpose by 2 to 2 1/2 stops, rating the Vision 320T at 40 ASA. When you looked at Palisades High on a normal lens with a normal exposure, you saw the rust and decrepitude of the school. It didn't have a contemporary edge; it just looked non-maintained. Pali High has all exterior corridors with large overhangs that allow beautiful, ambient light to come in underneath by the lockers in the corridors. But at the end of the corridors and off to the sides, where there's sun, the look just blows out. In our PreView System tests on the digital camera, the highlights were clipping out just to the point where dead palm trees in the background suddenly didn't look dead anymore because they were nuked out [in exposure]."

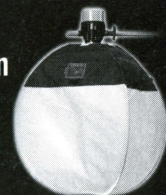
Hurlbut continued this overexpo-



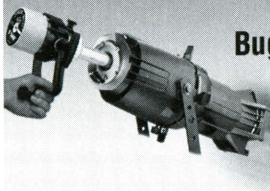
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[illegible]

Thanks to his careful planning and color-timed reference photos, Hurlbut was able to execute each scene in the lighting conditions he felt were best. "That certainly was radically against the norm," he observes. "We'd go inside the house and shoot for a while, then come back outside when the

light was right for a particular angle, then go back inside again and come out again. For a scene in front of Nicole's house, for example, we waited until the sun had dipped down on the other side of the mountain, and that gave us two and a half hours to shoot the scene in this beautiful, ambient soft light. We ended up trying to shoot a lot of the

movie that way. We wanted to create a look that was like a cold, desaturated watercolor painting with fresh, abstract framing thrown in to give it a shot-from-the-hip, improvisational feel. We wanted it to feel natural and imperfect — kind of like a teenager!” ■

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Antisocial Darwinism



Director of photography
Philippe Rousselot,
ASC, AFC lends his
unique lighting
approach to a reborn
Planet of the Apes.

by David E. Williams

American Cinematographer's journey to the *Planet of the Apes* last March hardly required a spaceship or time travel. Instead, it was a short drive to the Los Angeles Center Studios downtown, where the production was finishing an 80-day shoot before moving on to complete filming in Hawaii. Led to an unassuming stage, we soon stood within the rusting wreckage of a massive crashed starship — one of many elaborate sets crafted by production designer Rick Heinrichs, who had

last collaborated with longtime friend and *Apes* director Tim Burton on *Sleepy Hollow* (see AC December '99). Courtesy of cinematographer Philippe Rousselot, ASC, AFC, brilliant shafts of Par-lamp sunlight cut across the ship's grimy bowels, bouncing off the pale yellow sand that covered the floor to illuminate a tragic scene unfolding before the camera.

"Okay, let's do it one last time," announced Burton, whose halo of shaggy black hair framed a pale face darkened by a scruffy

Opposite page: Daena (Estella Warren) moves in for the kill during an epic battle between apes and humans. This page, top: For a moment, General Thade (Tim Roth) has astronaut Leo Davidson (Mark Wahlberg) right where he wants him. Bottom: Leo and Daena salvage their wounds.



growth of beard. With that, he and Rousselot quietly conferred, and the French-born cameraman called for one of the space lights hanging from the perms to be dimmed a bit.

On the other side of the set, two animal trainers readied the star of the scene: Joe, a four-year-old chimpanzee clad in a tight white NASA spacesuit. Many aspects of the film's screenplay are closely guarded secrets, but given that Joe's co-star on the set, actor Mark Wahlberg, was wearing a very similar costume, it seemed clear that the two were stellar comrades.

"Can Joe crawl more slowly through this take?" Burton asked the performer's trainers. They replied that he could, and moved Joe into position. With that, Burton called "Action," and the cameras rolled as the trainers coached their hirsute star. "Joe, crawl!" one ordered, prompting the chimp to assume a twisted position in the sand, looking as though he'd been horribly wounded. The ape appeared to be in agonizing pain as he began to drag



himself into an open hatchway.

"I think he's going for the Golden Globe!" Burton exclaimed, visibly impressed. With a laugh, Rousselot agreed: "It really is amazing what he can do."

"Excellent! Cut!" Burton shouted, at which point Joe jumped up, presumably happy that his big scene was over. Burton and Rousselot

immediately walked over to Joe, who reached out to the cinematographer. The filmmaker smiled as the chimp climbed into his arms. A surreal scene had become a very human moment, quite in step with the film being made that day.

One of the most anticipated films of the summer, this *Planet of the Apes* is not a remake of the 1968 sci-fi classic. Instead, the filmmakers have gone back to French author Pierre Boulle's 1963 novel *La Planète des singes* (*Monkey Planet*) for inspiration in concocting the near-future tale of astronaut Leo Davidson (Wahlberg). Davidson inadvertently touches down on a hostile world in which intelligent apes rule over a band of humans — the survivors of a crashed starship — who have become their slaves. The apes, led by the vicious chimp General Thade (Tim Roth) and gorilla commander Attar (Michael Clarke Duncan), capture Davidson and take him to Ape City for interrogation. But with the help of a sympathetic simian activist named Ari (Helena Bonham-

Antisocial Darwinism



The ape army marches into battle in a sequence captured from a variety of impressive angles.



Carter), Davidson escapes to the Forbidden Zone, a stark desert landscape where the humans' derelict ship lies in ruin. Thade and Attar give chase with their army, resulting in an all-out war between the species.

AC's visit to the *Apes* set included watching the filmmakers shoot an imaginative and elaborate ending, but its details remain classified. Suffice to say that it includes another crashed spaceship, some 100 extras in ape makeup created by Rick Baker (see story on page 52), and plenty of action.

Not incidentally, another visitor to the *Apes* set that day was cine-

matographer Gale Tattersall, BSC, who has known Rousselot since the two toiled together in the jungles of Brazil on *The Emerald Forest* in 1984. Tattersall had not only come to visit an old friend, but also to glean some information about Rousselot's extensive use of lighting balloons on the production — an extension of the cameraman's longstanding love for the soft illumination provided by Chinese lanterns.

Rousselot, whose artful and naturalistic lighting is featured in such films as *Hope & Glory*, *Dangerous Liaisons*, *Henry & June*, *Interview with the Vampire* (AC Jan.

'95), *Remember the Titans* and *The Tailor of Panama*, is one of the few cinematographers so closely associated with a single tool of his trade. "I suppose I started something with the use of Chinese lanterns, but I think it spread because they're really magical," says the cameraman, who won an Academy Award in 1993 for *A River Runs Through It* (AC June '93).

Once a student of the late Néstor Almendros, ASC, with whom he worked as a camera assistant on such films as *My Night at Maud's*, *Claire's Knee* and *Chloe in the Afternoon*, Rousselot is engagingly enthusiastic about Chinese lanterns. "The light they create is very unique, in that it is 360 degrees of diffused light rather than light that is focused on something through a lens," he explains. "It has an elegant feel, and lighting balloons are an extension of that feeling. But neither tool can just make everything happen for you. They have to be used in a certain way and in a certain context, and they don't replace other kinds of lamps. I also feel that the more 'heavy-duty' China balls [that are manufactured today] kind of defeat the purpose. Ordinary paper lanterns are very lightweight and you can fix them anywhere; to make them heavy, complicated or expensive works against their simplicity."

Rousselot adds that the light created by lighting balloons "is perfect for moonlight because it's coming from everywhere. A Musco or Bebee light, though fantastic, is much too hard and directional, and once you park one of those into position, it takes three hours to move it. It's not fair to compare them to balloons because they're totally different, but balloons are easy to move around — a pleasure to move around, in fact. And if there is too much wind, which is often a problem, they can be anchored directly to the ground and used like self-illuminating silks."



Planet Bound

Apes is Rousselot's first return to the realm of unbridled fantasy since his luminous work in *Interview with the Vampire*. "Coming onto this film happened rather fast," Rousselot recounts. "I was negotiating for another job and got a call from my agent saying that Tim wanted to talk to me about the project. We discussed it on the phone, and I soon had a copy of the script. My decision was made quickly, which was good because they needed somebody very soon to scout locations in Hawaii, Arizona and the California desert. When you get a call from Tim Burton about a movie like this, there isn't a lot of hesitation."

As Rousselot read the film's script, which later went through many changes, he pondered the visual possibilities offered by its outlandish premise. Aside from a brief series of scenes set aboard a spacecraft at the beginning and end of the film, it looked as though his light sources would be limited to the sun, moon and various fire effects, but there were still many options. "Because this film is set in a totally different world, your imagination can wander anywhere," he explains. "But the longer you explore those possibilities, you realize that you

can't stray too far from reality. You have to find a balance between your dreams and what you *should* do. Tim and I went through a lot of conversations and camera tests in trying to determine how this world should be seen, particularly in the film's daylight and nighttime looks."

The duo's initial thoughts were to "thoroughly change the colors by adding several giant planets or moons in the sky, which would immediately offer new sources for light," Rousselot recalls. "It was very exciting because that allowed our nights to be totally red, yellow or purple. But we [eventually] eliminated those ideas because we felt they might seem too decorative and artificial, or need so much explanation that they might detract from the story. We instead tried to find a way of slightly distorting reality without going so far that the audience would think something is 'wrong.' In doing so, we devised unique looks for our primary locations: the desert, the jungle and Ape City."

Because Baker's detailed ape makeups were key to the film's success, Rousselot spent considerable time doing lighting and camera tests on them. He admits, however, that he thinks such tests are "usually a waste of time, unless something



The crew adds some bounce fill while capturing close-up action for the battle.

unusual is being done, such as the makeup in this film. Test situations rarely represent what you'll be faced with on the set, and generally won't prepare you very well. But it was necessary on this film because we had to get used to these faces and learn how to make them look their best." The cameraman determined that a #1 or #2 Tiffen Soft F/X filter was needed to take the edge off when shooting the apes in close-ups.

One final key visual consideration determined in preproduction was the film's aspect ratio. There were important arguments in favor of shooting in 1.85:1 — primarily the vertical nature of the film's sets — but Burton and Rousselot instead chose 2.35:1 anamorphic because of the film's extensive desert vistas. The cameraman relied on Panavision's Primos and lighter C-series lenses on his main cameras and the Steadicam.

The Forbidden Zone

Filming began in November 2000 on the shores of Lake Powell in Arizona, the same desolate desert location used for 1968's *Planet of the Apes* (see AC April '68). But while

Antisocial Darwinism

If you can't beat 'em, join 'em: Charlton Heston, who portrayed astronaut George Taylor in the 1968 *Planet of the Apes*, makes a cameo in the new version as the ailing father of General Thade.



legendary cameraman Leon Shamroy, ASC relied primarily on the stark contrast between the area's surreal, sun-bleached rock formations and azure blue skies to render that film's world, Rousselot chose a different approach. The cinematographer had gained extensive desert experience while shooting commercials in the Sahara and in the Australian outback. "I've certainly been scorched — or frozen — before," he says with a laugh. "I find desert locations to be very exciting because they bring up a lot of questions about how to photograph things that appear so flat and abstract. The normal ways of judging distance and height, such as trees or buildings, do not exist."

One key was what Rousselot jokingly refers to as his "Theory of the Dunes," which relates to depicting elevations such as sand dunes or mountains. "In order to accentuate their height, you have to get away from them. It sounds odd, but the closer you get, the smaller they look. You have to understand how to approach these landscapes before you try to photograph them, because it takes so much time to change positions."

The deep blue skies that often dominate desert photography didn't appeal to Rousselot, "so we used a series of Cokin Varicolor polarizing filters to create a different look. They're very interesting on their own, but even more so when you combine them with another polarizer. You lose about four stops, but very weird things begin to happen — though it's not as brutal as using the Cokins by themselves."

Made of lightweight CR-39 organic glass, Cokin's Varicolor polarizers are more commonly used for still photography. However, Rousselot was interested in their ability to selectively add color to a scene rather than just reduce glare and accentuate colors as a standard polarizer does. The filters come in four combinations: #173 blue/yellow, #171 red/blue, #172 purple/orange, and #170 red/green. Like all polarizers, their effect depends on the filter's orientation and on the polarization of the light in the scene, but the Varicolors add color to the polarized areas and overlay the rest of the scene with the filter's complementary hue.

Used in combination with other filters, the Varicolors can produce truly unique effects. For

example, when combined with a linear or circular polarizer — depending on the rotation of the filters — one can vary the colors gradually from one extreme to the other. For instance, the #171 red/blue goes from red through every shade of purple to blue. In addition, if the polarizer is rotated with the Varicolor to achieve a hue between the two colors of the filter, that hue will not change when you turn the filter holder as a whole, but reflections will alternate between the two colors.

"We did some tests with various filter combinations, and Tim thought the look was very interesting," Rousselot says. "The color shift is remarkable. The sky and other non-polarized areas become almost opposite colors, and you can even make very extreme color changes during a shot by simply rotating the additional polarizer. But the effect is also very random, so there is a problem in matching shots; when you change angles you're changing your relationship with the source of the light, which in turn changes the effect of the filters. Also, when changing lenses, it's difficult to pull the filters apart and then find the exact rotation combination again.



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A pair of ape soldiers get some extra bounce in their stride, with the help of wire rigs attached to a moving truck, as they gallop across the desert terrain. The wires were later erased during postproduction.

It's risky business."

First camera assistant/C-camera operator Pamela Rittelmeyer says the Varicolor #172 purple/orange filter produced the effect of choice. "That was the only one we used because it was quite an ordeal to get one big enough — 123mm — to be used with our Primo lenses," she says. "The Cokin's are designed for still cameras, so they were all much too small. Philippe actually had to track down the president of Cokin in Paris!"

"I had to beg him to make us a custom filter," Rousselot recalls, adding that due to the fragile glass Cokin uses, "we could only get it as a 123mm filter, which just barely covers the Primos, and it's the only one that exists."

Unfortunately, the custom filter didn't fit any available holders, so "we basically had to tape it in place, which was fun while shooting out in the desert with dust blowing everywhere!" Rittelmeyer says. Store-bought versions of the #172 were used to cover the C-series lenses on other units.

Adding another step to his

filtration cocktail, Rousselot had Deluxe in Hollywood color-time his dailies back to "more or less normal" by zeroing in on skin tones and other references. So while the image looked quite red through the camera, it was a burnt orange after this timing, leaving behind distinct color artifacts created by the filtration process. "The image won't look totally bizarre, but we'll have taken off the edge of normal with a slight color shift," Rousselot explains. "This allows us to almost entirely avoid having blue skies, which I feel are quite cliché."

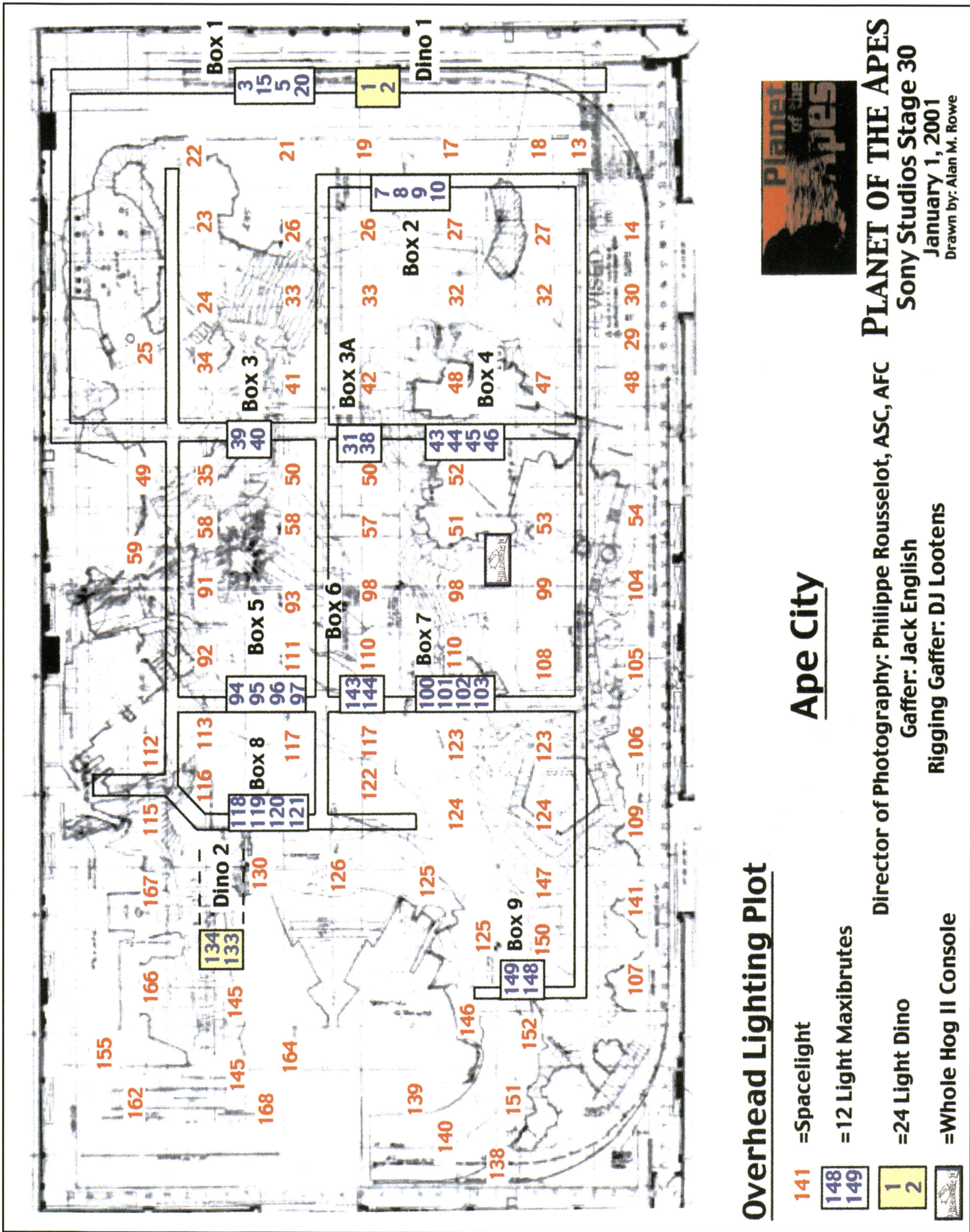
Rousselot primarily relied on Eastman Kodak's EXR 100T 5248 while shooting his desert daylight scenes, generally using a standard 85 filter with the stock. But due to the light loss from his special filter packs and the low angle of the November sun, he turned to daylight-balanced Vision 250D 5246 in the morning and late afternoon. Although the 48 offers rich contrast, the cinematographer used very little fill light despite the apes' dark complexions and costumes. "You have to remember that the desert floor itself is a massive bounce," he says. "So most of the

time I didn't have to add much — maybe a silk to even the light, but that's it. I actually needed the color contrast of the 48 to retain the detail of the images so they wouldn't just look bland, especially when we had hazy skies, which was frequent. I think the 48 is wonderfully vibrant, even more so than [EXR 500] 5245."

Fight to the Finish

The company moved to the scenic Trona Pinnacles in California's Mojave Desert to shoot the film's climactic ape vs. human battle, which takes place on an open plain at the foot of an ancient mountain of twisted spaceship wreckage. "One great thing about Rick's set, which was built out there over a period of months, was that it was facing north, so we were facing south and had almost continuous backlight during the day," Rousselot says. "That helped tremendously. It was an excellent location and the set was fantastic."

As luck would have it, the site was a protected area due to its unusual geologic formations, flora and fauna, and that designation severely restricted the filmmakers'



Antisocial Darwinism

Human slaves are wheeled into Ape City, a massive set built within Stage 30 at Sony Studios. A more complete view of the overall lighting scheme is presented in the diagrams on pages 33 and 35.



access. "There are, very rightly, many rules there about vehicles and such, so moving hundreds of people, trucks and equipment was a problem," Rousselot relates. "But during the scout we noted that it was a very dusty area, and that a desert battle with hundreds of people would logically kick up a big cloud of dust. That dust would not only add an element of chaos to the battle, but would also allow us to do much of our action and close-ups almost anywhere. We knew we wouldn't have to do everything in [the restricted] location."

Burton and second-unit director/stunt coordinator Andy Armstrong agreed that Rousselot's idea would help immensely,

compelling the production to ship in several Ritter fans and generous quantities of Fuller's Earth. The resulting dust cloud "made the battle seem that much bigger," Rousselot says. "In this swirling dust you see apes and humans fighting, disappearing into the cloud. Visually it's much more graphic and dramatic, and [it hides] the fact that nobody is really getting hurt."

Unfortunately, the swirling dust made it necessary for the crew to don goggles and dust masks, and made it extremely difficult for the camera crew to keep the equipment clean — especially with the taped-on Cokin filter. "I commend them for getting through those days without

crying and breaking down!" Rousselot says.

For one shot that peers directly down on the battlefield from a God's-eye view, key grip Alan Rawlings and his crew constructed a special rig consisting of a Lenny arm mounted to the end of a Chapman crane, giving the camera about 45' of lift. "We could drive that right onto the set, shoot and drive it away," Rousselot says. "We only used it a few times, though; to cover the action, we primarily relied upon the Steadicam [operated by A-camera operator Neal Norton] and fixed tripod positions."

Inserts and special stunts for the battle scene were photographed on stage at L.A. Center Studios, where a miniature (about 60' x 40') interior desert was created and dressed with portions of the spacecraft wreckage brought back from the Trona site. A beige fabric cyclo-rama encircled the giant sandbox, while dozens of Maxis fronted by 4' x 4' 216 diffusion frames were hung above it to create a brilliant crown of soft, omnidirectional illumination. With the Fuller's Earth flying, it would be a perfect match. "We primarily used longer lenses to complete the illusion," Rousselot adds.

Throughout the rest of the shoot, the cameraman generally used much wider lenses than he normally might have, especially in the anamorphic format. "I used the 35mm more than I ever had before," he says. "I didn't even think we should rent it, but I ended up quite liking it, though the 75mm and 100mm were our most-used lenses."

For several key nighttime scenes shot in Trona that take place just before the battle sequence, Rousselot was set to shoot day-for-night and later employ a digital color-timing process that would give him complete flexibility in creating an appropriate nighttime effect via sky replacement and other tech-

242 468
244

259 260 246 267

279/280 271 272

277/278 265 273 274

243 245 241

261/262

313/314 317/318

315/316

289 290 291

292/293

In overhang

321/322 319/320

Inaccessible

381/382 383/384

453/454 455/456

451/452 349/350

351 352

369/370 367/368

330 327/328

374 329 325/326

373

387 385

390 379 - 384

Front Torches

Back Torches

427 - 436

373

Practical Lighting Plot

- Window
- Batten Strips
- China Balls (Numbers in Black)
- Chandelier
- Practical Fixture
- Whole Hog II Console

Ape City

Director of Photography: Philippe Rousselot, ASC, AFC
Gaffer: Jack English
Rigging Gaffer: DJ Lootens

PLANET OF THE APES

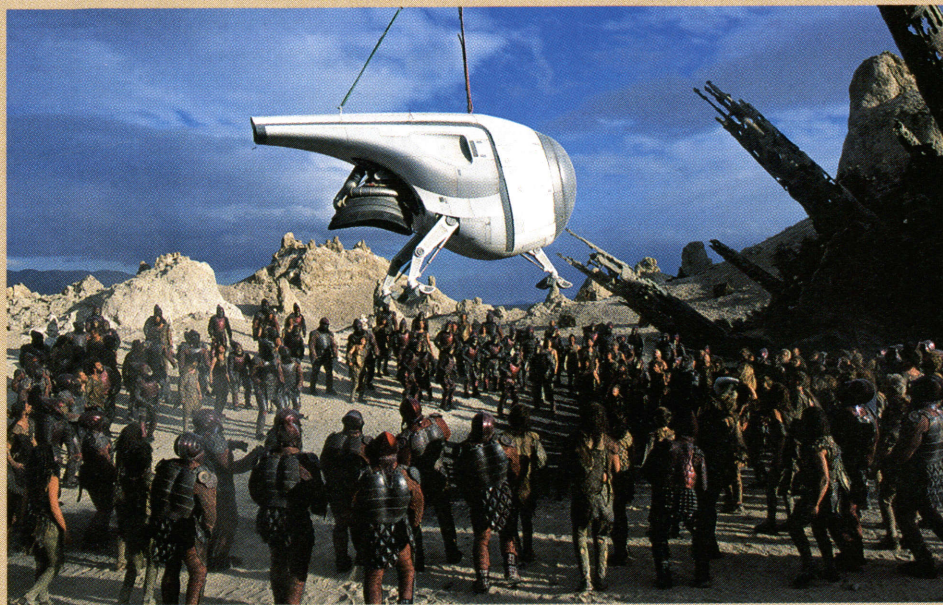
Sony Studios Stage 30

January 1, 2001

Drawn by: Alan M. Rowe



SHIPSHAPE EFFECTS



Top: ILM created an 18' miniature of the spacecraft *Oberon* and a CG landing pod, shown here, was used for scenes shot on location. Lower left: Burton poses at the shrinelike site known as Calima. Lower right: Production designer Rick Heinrichs shows off his handiwork.

Planet of the Apes features about 100 effects shots courtesy of Industrial Light & Magic. Some of the facility's most spectacular work involved creating the spacecraft *Oberon* and its landing pod, both of which were based on the designs of longtime Burton collaborator Rick Heinrichs and John Dexter. The *Oberon*, which looks something like a huge cross with curved arms, was an 18' miniature built by ILM's model shop at the urging of visual-effects supervisor Bill George, who began his career as a modelmaker. "Although it only appears in a dozen

shots and it didn't really need to do anything except look pretty, I find that it's so much better to have a big model like that to light," George says. "While we can replicate the specular highlights you get off the panel detail in a CG model, as we've done on our *Star Trek* projects, it's much more work to recreate the kind of subtlety in CG that just happens for free on a regular model."

Although the *Oberon* was shot using motion control, the pod was entirely CG. "We went back and forth about whether to use a miniature for the crash," George admits. "I love the immediacy and the interaction that you get with models, but you have to make the model move with a rig, and many times it gives away the fact that

there is something driving it along. One of my inspirations for the crash was footage of NASCAR crashes; there's a complexity about the way the cars spin and things fly off them. There's no way to build a rig to puppeteer that, but with a CG model, we can finesse that gravity and that movement."

While the crash landing of the spacecraft in the original *Planet of the Apes* was impressionistic, conveyed via a POV shot plunging toward the planet's surface, audiences will see it all in Burton's film. "I feel a bit gyped watching the original film, and our crash is very different," George says. "It's much more exciting and not that abstract. We shot the impact — minus the pod — in a tank, which represented the bog in a forest that the production had built as a set. We set off pyro charges in the water so that when the CG pod hits, it feels interactive. That type of interaction is very difficult to do in the computer."

Aside from creating an absolutely realistic spacecraft, ILM's role included replicating simian hordes and extending Ape City. "*Planet of the Apes* was a mid-range-sized show for us," George notes. "However, we used just about every modern effects technique we have on it. In addition to the miniatures sets and the motion-control models, there are numerous digital matte paintings, crowd-replication shots, digital set extensions and effects animation. This film is less fantasy-oriented and much more realistic and gritty than the last few films we've done with Tim Burton [*Sleepy Hollow* and *Mars Attacks!*], but it is nonetheless totally stamped with his style."

— Ron Magid



The crew lines up a shot on a set dubbed the Stone Cistern, which was built at L.A. Center Studios. Note the China ball suspended from the pole in the center of the frame. In discussing his favorite lighting tool, Rousselot notes that "the light they create is very unique, in that it is 360 degrees of diffused light rather than light that is focused on something through a lens."

niques. In fact, this was a condition for his doing day-for-night work on *Apes*. Even though he planned to rely on digital timing, however, Rousselot shot these scenes using traditional day-for-night techniques — using ND grads, his Cokin filters and polarizers to lend the scenes a blue wash, thus getting a jump on achieving the look he desired. "We later [digitally timed] some initial shots and the results looked absolutely fantastic on the video monitor, but after we came back to film, I was very disappointed," the cameraman says. "I compared the original shots [conventionally color-timed for a nighttime look at Deluxe] with the digitally corrected version, and I preferred the originals. I can't exactly explain why, though I could see an electronic edge.

"We had done tests before the shoot, and they looked quite good, but tests can never replicate what you might get on the set. I was relying on digital timing because doing day-for-night work wasn't just needed for production reasons, but because of the nature of the desert landscape. There was no way to light it at night.

Even with 200 Muscos out there, the light will stop at some point and ruin the effect. You'd need nuclear weapons to do it!"

Although he has been impressed by the effect of digital timing in other films — particularly the work done by Roger Deakins, ASC, BSC on *O Brother, Where Art Thou?* (AC Oct. '00) — his experience on *Apes* has left Rousselot "somewhat pessimistic" about the technique. "Theoretically it's great, but I don't think we're there yet, at least not for what I wanted on this film."

One striking nighttime effect was rendered with the aid of the production-design team for scenes set at the ape army's camp. Using a series of 10 Aerolight 12K tungsten balloon lights — designed with input from his longtime gaffer, Jack English — Rousselot lit the landscape to a T3.5 (shooting with Vision 500T 5279) and balanced it to the glow of the campfires, while the army's deep-red tents were lit from within; this essentially transformed the tents into enormous Chinese lanterns. "There are very few primary

colors like this in the film," the cinematographer notes, adding that the tent fabric was artificially aged to tone down the vibrant hue. "They looked better that way, and they made beautiful lanterns!"

Simian Stronghold

As the production was shooting in the desert, Stage 30 at Sony Pictures Studios in Culver City was transformed into the organic, Art Nouveauesque Ape City, a major construction project for Heinrichs and his crew. Fortunately for Rousselot, he was not required to render a full daylight look for Ape City, which was entirely shot onstage. (Industrial Light & Magic worked with VistaVision plates shot by visual-effects cameraman Jonathan Taylor to extend the sprawling settlement and show it in the distance for certain shots.) Instead, Rousselot primarily had to create dusk and nighttime effects. "We did do one day scene in there, but we used a lot of smoke effects to create a foggy or overcast look with very diffused light. It would have been impossible to do a bright, sunny day effect

Antisocial Darwinism

The camera crew captures an overhead view of the film's climactic battle.



simply because we couldn't create a single-source light strong enough to cover the entire set, especially because it went right up to the perms." He adds that he utilized the 5279 film stock throughout the Ape City shoot.

Rousselot attests that the preponderance of dark stone and deep-brown wood finishes, often shadowed by heavy foliage, didn't soak up as much light as one might expect, but two elaborate lighting schemes offered him plenty of wattage. Devised by Rousselot, English, best boy James Babineaux and rigging gaffer D.J. Lootens, the plans consisted of overhead and

practical lighting rigs (see diagrams on pages 33 and 35) that were supplemented by floor lamps and mobile Chinese lanterns mounted on boom poles.

The overhead array, mounted on greenbeds, consisted mainly of several rows of 12-light Maxi-Brutes, which were arranged in boxes containing two or four units layered with heavy 216 diffusion; the grips fashioned large eggcrates for the boxes to contain spill. At each end of the stage was a box containing two 24-light Dinos, adding more punchy directionality to the light when needed. Hanging above and adding overall ambiance was a uniform grid

of 85 6K space lights. With everything running through a Whole Hog II dimmer board operated by Alan Rowe, Rousselot had 150 channels of illumination at his fingertips.

One might suspect that it would be a problem to separate the dark-toned set from its inhabitants, who were also dark-toned and generally clad in browns and blacks, but Rousselot says this was not the case thanks to his soft-light approach. "I usually have a big problem with light-colored sets," he explains. "When you use big, soft lights, the problem is usually trying to cut the light to keep it off the walls, because separating the actors from the set requires letting the background fall off. So the darker the set, the better! If you work with hard light, though, you have the opposite problem. It wasn't too much of a problem in Ape City — I usually found that I actually had too much light."

The Ape City practical lighting scheme was far more intricate because it had to accentuate 10 elaborate "streetlamp" fixtures (basically oversized gas-flame lanterns) used to illuminate courtyards and other open areas, as well as cover the roughly 25 building windows in order to offer the filmmakers directional sources while shooting interiors. Again, everything ran through Rowe's dimmer board for maximum control. "Those streetlamps offered good motivation," Rousselot recounts. "We mixed in a little cool moonlight, but mainly used warm firelight."

The main building interiors were lit primarily by practical chandeliers and multiple Chinese lanterns. "My use of China balls is always done in combination with a lighting console," Rousselot says. "When I first get on a set, my instinct is to cover the ceiling with China balls, all linked to a lighting console. Then, as we start to set our shots, I'll pick out the lamps I want with the

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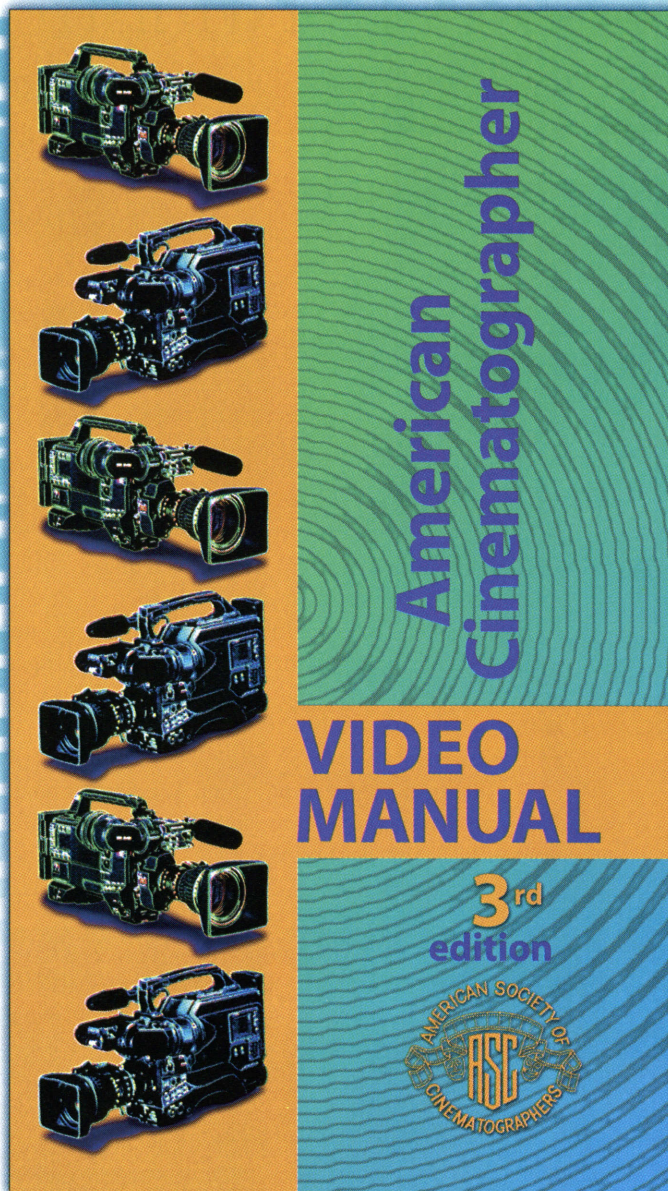
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ABOUT THE AUTHOR: Michael Grotticelli is uniquely qualified to edit this book. He has been covering the professional video industry for more than 12 years. His credits include: Technology/New Media Editor at Broadcasting & Cable; Editor of Television Broadcast; News /Technology Editor of TV Technology; and Managing Editor of Videography.



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Antisocial Darwinism

Rousselot strikes a playful pose while peering through two of the various filters he employed on the show.



dimmer channels, quickly adding and subtracting light in a very instinctive way. I'll sometimes even do that within individual shots. That gives me a lot of freedom to play with the light and see how it reacts with the action.

"Before I began using China balls and this method, I was always worried, because lighting generally

requires setting up a lot of heavy equipment either on the floor or in the ceiling," he continues. "But until you're all rigged and you begin to adjust the lamps to the scene, you don't know whether what you've done is right. By using softlights and a dimmer board, you can really make your final decisions at the last minute based on what's happening

on the set. You're not obliged to follow the original plan."

An Emerald Forest

The main *Apes* jungle, created on stage at L.A. Center Studios, featured a small lagoon and many broken trails leading through faux foliage. Overhead, an array of 6K space lights provided a soft general illumination, while Mole-Richardson 5K and 10K beam projectors aimed through a light layer of smoke created strong shafts of light that cut through the lush greenery and carried to the forest floor. The effect was designed to be convincing yet fantastic. "Even if we'd shot the jungle scenes in a real jungle, it would look totally different in that it would be impossible to get our lights up high enough to have them go through the canopy," Rousselot says. "Being able to light from above [the canopy] creates a totally different feel."

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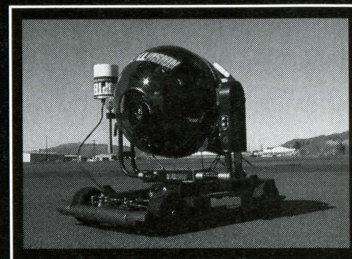
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The cinematographer notes that it's always difficult to create exteriors on stage, but adds that one main challenge has little to do with lighting or camerawork: "It's a big crew, and no matter what, they are going to ruin the set by simply walking on it and moving equipment around. They can't fly. Everything is destroyed after the first hour, which means that you have [to use up some time] between each take to repair the forest. You must do that, or the illusion is broken and no amount of work will fix it. You start with a great set and rebuild it every half hour!"

Previous experiences had taught Rousselot the importance of using low angles to help sell the jungle illusion. "You have to shoot up and see the sky, even if it is just a piece of sky. If you're on stage and have no sky, you have to cheat it. [On this film,] we'd use a series of beam projectors to create a sky with almost

parallel shafts of light and plenty of space lights. Every time we tilted up to catch that illusion, the jungle became much more alive. We wouldn't go totally vertical, but just shoot towards the tree canopy rather than toward the roots. By simply changing the shafts [of light] around, we could endlessly reuse the same small set."

Rousselot adds that while his stops varied throughout the shoot — ranging anywhere from a T2.8 to a T8 — he did try to maintain T2.8 as a minimum in order to give his first assistants a fighting chance. "The Primo primes go down to a T2, but the depth of field gets so shallow that it's impossible to focus. There's no point in making life hell for everyone, especially the director, who has to bring everyone back to reshoot what may have been an otherwise perfect take. So I try not to create impossible shots, although it did happen on one shot we did in Ape City, which was

completely out of focus. I was a bit angry with the focus puller until I realized that it was my own bloody fault!"

Rousselot completed the *Apes* shoot on the Big Island of Hawaii in March, using the jagged lava fields of Mt. Kilauea to establish the location of Ape City, and the jungles to add dimension to scenes shot onstage. As he prepared for his timing work at Deluxe, Rousselot declared that "it was fun to create a total fantasy that I think people will enjoy tremendously, and working with Tim Burton was as pleasant as it could have possibly been. I thought he would be more dictatorial in terms of camera angles and things, but while he's full of ideas and knows what he wants, he's extremely open to other people's ideas. Being prepared and having your own strong ideas gives you the confidence to be that way." ■

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Feats of Flexibility

Matthew Leonetti, ASC teams with director Brett Ratner to showcase the legendary capabilities of Jackie Chan in the action comedy *Rush Hour 2*.

by Jay Holben

Unit photography by Peter Sorel, SMPSP and Ben Glass

If there were an award for unlikely duos, Hong Kong action master Jackie Chan and fast-talking American comedian Chris Tucker might take the grand prize. However unlikely, Chan and Tucker's pairing in 1998's *Rush Hour* drove audiences into theaters in record

numbers, and the phenomenal success of that action comedy led the filmmakers to regroup for *Rush Hour 2*. The sequel, for which director Brett Ratner teamed with cinematographer Matthew Leonetti, ASC, follows Inspector Lee (Chan) and Los Angeles Police Department

Detective Carter (Tucker) as they track down the man who killed Lee's father. The pair's exploits take them from Los Angeles to Hong Kong to the glitz and glamour of Las Vegas.

Leonetti has been behind the lens for hundreds of punches and explosions on films such as

Photos courtesy of New Line Cinema.

Commando, *Hard to Kill*, *Another 48 Hours*, *Strange Days* (see AC Nov. '95), *Mortal Kombat: Annihilation*, and the recent thriller *Along Came a Spider*. According to Ratner, the cinematographer's flexible approach to lighting was a key factor in dealing with Chan's elaborate fight sequences. "Many times we'd come to a place in the script where it said, 'They fight,'" the director recalls, "and we'd have to create it as we went. Working with Jackie isn't like working with a normal stunt coordinator. We're all used to choreographing a fight — shooting it in a master and then going in and picking up the punches from the optimum angle — but Jackie doesn't work like that. He works out the sequence based on what happens each moment. The way he hits one guy affects how he'll turn and hit the next guy, and the way they fall down affects how the rest of the scene goes. It's a progressive thing that we'll shoot in continuity. Matt [Leonetti] is very open to that style of shooting, and he's flexible enough to turn around again and again to cover the sequence as Jackie

puts it together.

"Going into a sequence, I'll give Jackie a beginning, middle and end," Ratner continues. "I'll tell him, 'This is where you come in; you've got these pool cues, tables, lamps and chairs at your disposal, and this is where we end.' Jackie will then lay out the basics of what's going to happen, and we begin to take it shot by shot. A punch is really only good from one angle, so the photography has to follow those parameters to get the most dynamic coverage of the action.

Jackie's an expert at how we need to shoot each element for the maximum impact, and he's taught me a lot of tricks over these past two shows."

Chan is known around the world for his phenomenal stunt work and agility. American production companies, generally much more timid about the physical condition of their stars, seldom allow lead actors to perform death-defying stunts. Chan, however, continues to do the majority of his own stunt

Opposite page: Inspector Lee (Jackie Chan) and L.A.P.D. Detective Carter (Chris Tucker) make a daring escape from a sticky situation in *Rush Hour 2*. **This page:** In order to showcase Chan's carefully choreographed fight scenes, cinematographer Matthew Leonetti, ASC (bottom photo, in plaid shirt) adopted a flexible approach to lighting and camera movement.



Feats of Flexibility

Top: Leonetti (next to the camera) gets ready to film a dialogue scene with Chan and Tucker. Bottom: A reclining Chan prepares himself for a display of martial-arts expertise as Leonetti and his crew stand by.



work — with the added compromise of always working with a safety wire.

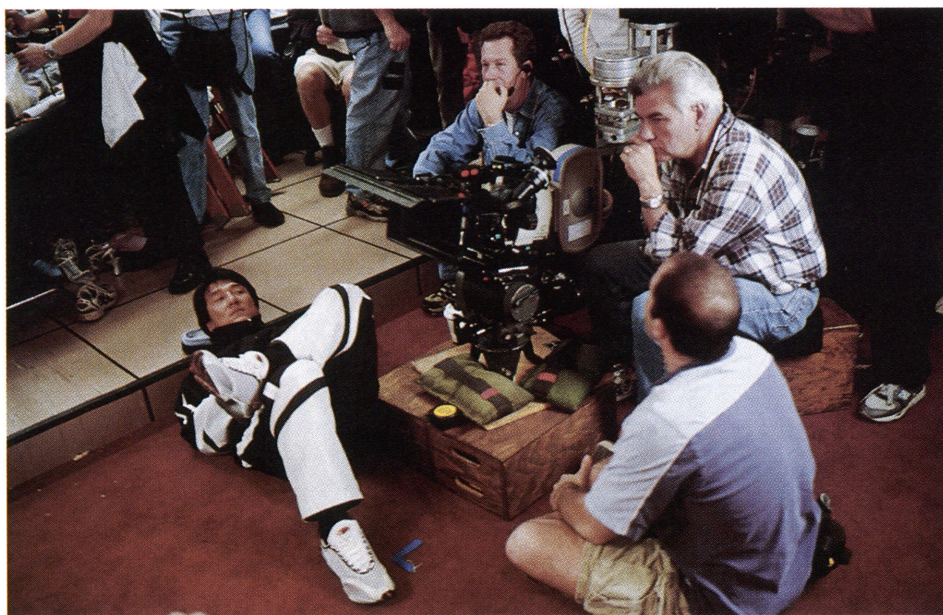
"We had an unusual schedule on this film," Leonetti says. "We shot, scouted, shot, scouted and then shot again, primarily because I came onto the project rather late, just two weeks before shooting. We did a quick scout for the Los Angeles portion of the shoot and started shooting right after that. Then we flew off to Hong Kong and scouted for a week before flying back to shoot our Las Vegas sequences. Then we flew back to Hong Kong, scouted for another two or three days with the crew, and shot the Hong Kong sequences before coming back to L.A. to shoot pickups and some stage work."

In devising a sequel, the general rule of thumb is "bigger is better." This typically means bigger stunts, bigger action, bigger laughs, bigger sets and, hence, bigger budgets. *Rush Hour 2* was no exception to this rule, and Ratner says he worked to achieve that next level while still keeping the heart of the original film. "In *Rush Hour*, the kidnapping of the little girl lent heart to the story," he notes. "We knew we wanted to keep that element this time around, so we went with a back-story that had already been built into the first film — Lee's father. We know what the audience loved about the first film, and it's really hard to not repeat those elements and at the

same time give the audience what they're looking for. [The sequel's locations] are more than just Los Angeles, and we've added new villains [played by Zhang Ziyi and John Lone], so it feels like a new movie."

Leonetti says the variety of locations in *Rush Hour 2*, as well as its storyline, meant that he "didn't really consider the look of the first film" when devising his visual strategy. "I always let the story dictate the photography," he points out. "It's not the same movie, so I don't think it needs to look the same. We simply let the story of this film dictate whatever the look would be."

The cameraman worked with a wide complement of Eastman Kodak emulsions, including Vision 200T 5274, Vision 320T 5277 and Vision 500T 5279, all rated normally. "I used 77 for most of my interiors," he details. "I like 79, but in conjunction with the Vision print stock it can get a bit too contrasty, so I tended to reserve that for nighttime exteriors only. We shot 74 for our greenscreen work and for some daytime exterior sequences. During our six weeks of shooting in Hong Kong, we never saw the sun come out! It was always overcast and hazy, so I went for 74 there as opposed to [EXR 100T] 5248 so that I could get an extra stop from the negative." To best utilize the extra speed of the film, Leonetti also eschewed the use of an 85 on the



lens, preferring instead to allow the lab to color-correct the daylight sequences. "I've done that a lot," he attests. "There's really no difference in a few printer points, and they can make it match exactly, so if I need the extra speed I'll always eliminate the 85 and shoot clean."

Rush Hour 2 was shot with Panavision cameras in the anamorphic format, with C-series lenses for Steadicam work and E-series lenses for the main body of the film. "I love the look of the E-series anamorphics," Leonetti attests. "They're slightly sharper than the C series."

Leonetti used 77 for much of his interior work as opposed to continuing with 74, for the same reason he chose 74 for exteriors: to utilize the extra speed. "We went with 77 on the interiors because I wanted to shoot at T3.2 to 3.5 most of the time. In anamorphic films, your widest lens is really a 40mm, so I wanted to keep as much depth of field as I could to hold the action. I

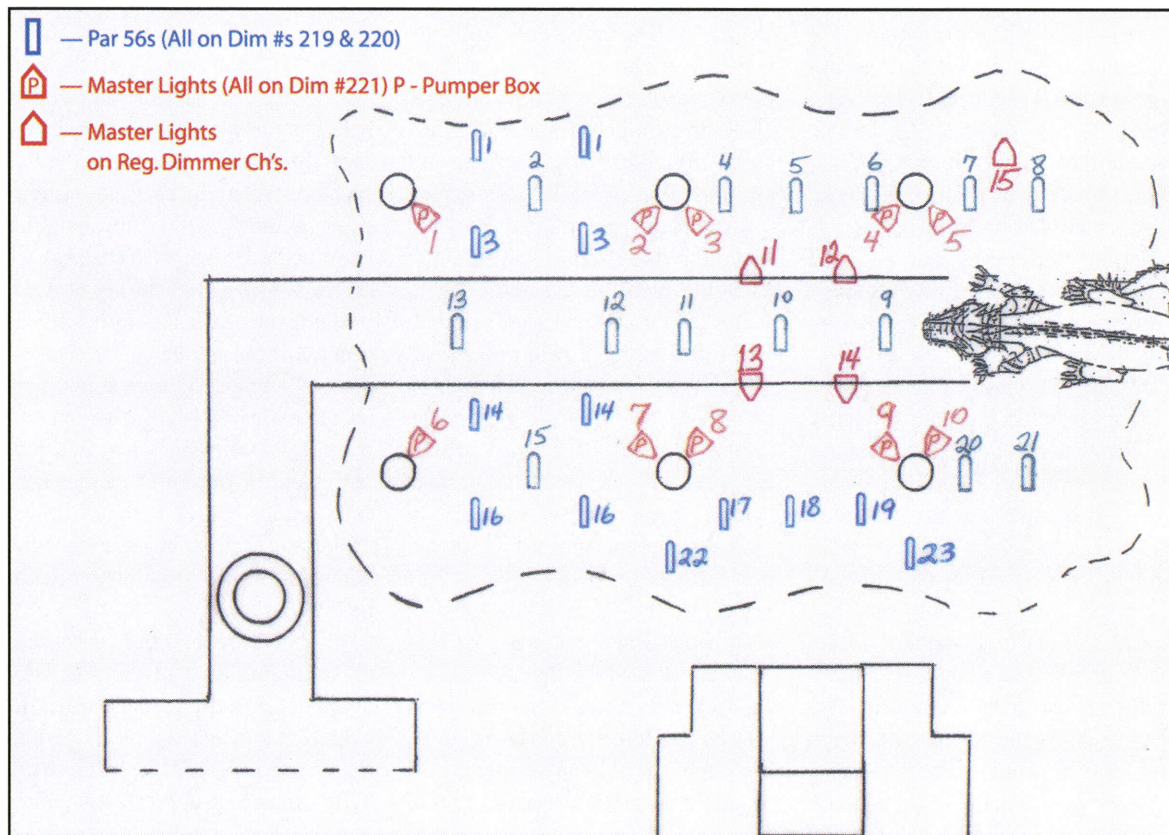
think T3.2 to 3.5 is where the lenses perform their best."

The cinematographer says that because of the amount of action in the film — as well as Tucker's tendency to improvise — about 70 percent of *Rush Hour 2* was shot with two cameras. This was especially true of the fight sequences. Veteran operator Jimmy Muro (*Terminator 2: Judgment Day*, *True Lies*, *Heat*,

Titanic, *Any Given Sunday*), who first worked with Leonetti on Kathryn Bigelow's *Strange Days*, served as A-camera and Steadicam operator. Gaffer Pat Blymyer, who has collaborated with Leonetti on more than 40 projects, again took up his post, and James Shelton worked as key grip.

The film starts in Hong Kong with Inspector Lee hot on the trail of the Triad member who murdered his

Detective Carter takes a walk on the wild side in the Red Dragon Casino. Below: The diagram shows Leonetti's lighting scheme for the scene.



Feats of Flexibility

This page and opposite: One of the vicious villains Lee and Carter must combat in the film is played by Zhang Ziyi, best known to American audiences for her high-flying feats in *Crouching Tiger, Hidden Dragon*



father. Carter joins Lee, and the two chase the villains through the streets of Hong Kong to a dead end. "The villains have no place left to go but up," explains Leonetti. "In Hong Kong, because there is such limited land space and such a high population, all of the buildings are several stories high. The bad guys run up this bamboo scaffolding that rises up several stories around one building, and Jackie and Chris chase them up and fight it out.

"When they get to the roof, Zhang Ziyi kicks Jackie in the head, and he winds up hanging off a single piece of bamboo scaffolding about eight stories up," Leonetti continues. "Then, of course, the bamboo breaks and he falls seven stories through awnings into an outdoor fish market. The whole sequence takes place at night, and it was quite a challenge to light up about 340 degrees of downtown Hong Kong in the background. Unfortunately, because we weren't allowed to go on top of the buildings, we were forced

to do all of the lighting from the ground. Our sources were street-lamps and architectural lighting, which brought up the city around them. We were able to place one 18K HMI on a building about 200 feet away from the main action and allowed that to rake across the rooftop as a primary source. We then keyed the main action with units in a Condor placed closer to the set."

The production shot as much of the action sequence as possible on location in Hong Kong, but camera placement was difficult within the limited areas of the bamboo scaffolding, so close work was done on stage in Los Angeles with a 1/2-scale city built in the background in forced perspective. Leonetti explains, "In reality, the buildings were 150 feet away from where we were, so that worked out well for the forced scale model. From there, I used a good amount of diffusion in the air to get the feel of the atmosphere we had in Hong Kong and used longer lenses to throw the background further out of

focus and sell the match."

Another big sequence shot on location in Hong Kong took place aboard a 175' yacht in the harbor. "Jackie chases the Triads onto a yacht where a party is happening, and we shot the whole sequence on a live yacht in the middle of the harbor," the cinematographer recalls. The lighting for the sequence was primarily contained within the vessel itself. Utilizing the boat's 280-amp 408-volt generator, the electric crew stepped down the power to a more manageable 120 volts, which provided plenty of power for what they needed. "Most of our units aboard the yacht were small: 650-watt or 1K units. There was nothing bigger than a 2K, and I think we only used one of those."

The party mainly takes place on the upper deck of the boat, and Leonetti asked the art department to help with his lighting needs. "I had them erect poles that we could string lights on, and we put 600-watt globes on the top of each pole to provide an



overall ambient light on the upper deck. The globes were all above the anamorphic frame line, and it worked out pretty easily." He adds that the rest of the boat was left "sketchy," with patches of light and dark, while the yacht's overall illumination was subdued to allow the city lights of Hong Kong to fall in nicely with his exposures.

Dealing with the classic problem of lighting actors of different skin tones in the same frame, Leonetti would often place the key source for the sequence on Tucker's side of the frame and set his exposure for Chan's side. The "excess" light on Tucker's side, which was closer to the source, helped to bring up the exposure for him. Leonetti also employed a snooted 1K with 250 diffusion to fill in Tucker's exposure when necessary.

After their adventures in Hong Kong, Lee and Carter travel to Los Angeles and finally to Las Vegas, where they discover that the Triad is laundering the majority of its counterfeit money through the grand opening of the Red Dragon Casino on the Vegas Strip. Fortunately, the production was able to utilize the Desert Inn, which had recently been purchased by tycoon Steve Wynn and gutted in preparation for demolition. Production designer Terence Marsh transformed the empty shell of the Desert Inn into the fictitious Red Dragon, and Leonetti and his crew undertook the formidable task

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Feats of Flexibility

Director Brett Ratner, camera operator Jimmy Muro and Leonetti gaze out over Hong Kong Harbor.

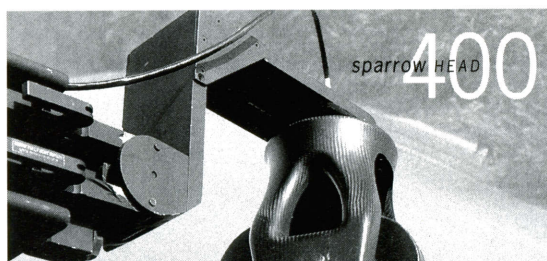


of lighting the facility practically from scratch.

Because the casino had been gutted, very little architectural lighting remained. Leonetti and gaffer Blymyer decided to start with a typical, commercial-architectural

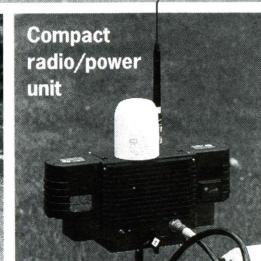
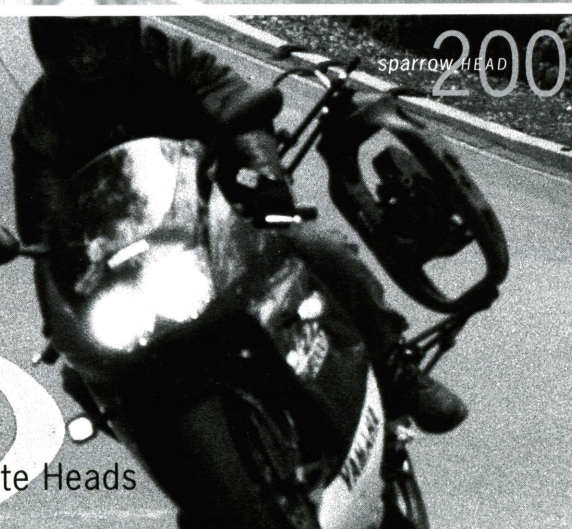
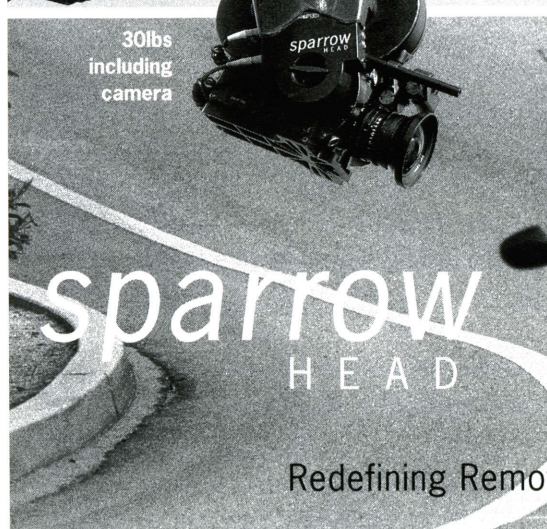
approach and built the lighting from there. They had a pre-rig crew install more than 300 RFL standard recessed lighting cans in the ceiling and under the balcony that surrounded the main floor of the casino.

Once they completed that chore, the crew placed more than 20 Par56 sources in addition to a dozen Master Lights — the latter units utilize a Par64 globe in an open housing with an intensifier to focus the beam. (The unit was designed by Leonetti's father and is run to a control box, which converts AC power to DC and allows the unit to be "boosted" to 200 percent of its normal output.) The Master Lights were interspersed throughout the ceiling to create hot pools around the casino floor. "We decided to light it like you would a real place, and just augmented that with movie lights," recalls Leonetti. "In the casino sequences, we sometimes had 600 or 700 extras in a single scene, and the casino floor was about 250 feet by 480 feet, which is quite an area to light. Adding to the recessed cans in the ceiling and the Pars we hung, we also put a number of smaller fixtures



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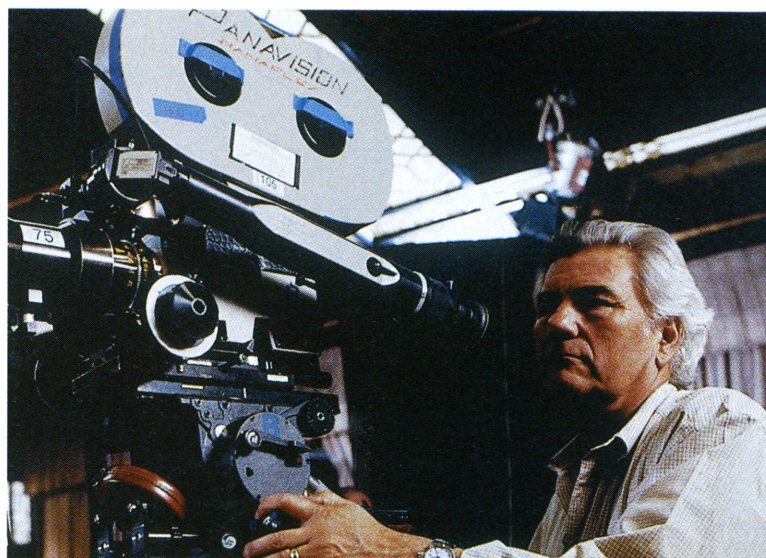
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on the walls to lend some texture to the background. We tried to keep those fixtures out of the shots, but if they did sneak in now and then, they looked like the practical lighting you'd find in a casino. For scenes where we didn't see the balcony, I used that upper level to create backcrosses and three-quarter backlights for Chris and Jackie, and for general spot fill of key areas on the floor.

"Brett wanted the whole film to have a basis in reality, so I wasn't worried about giving it a really slick look," he adds. "We basically put the actors in real environments, which also lent itself to any action that took place on the casino floor."

All in all, the casino rig drew an amazing amount of power, with 2,000 amps alone required to power the 300 slot machines imported by the art department.

The Red Dragon sequence climaxes with a daring escape, as Lee



Leonetti provides a steady hand on the tiller.

and Carter swing from the top of the building to the ground via a long strand of large Chinese lanterns. The sequence proved to be another challenge for Leonetti, who notes, "The exterior of the building was yellow, but the overall design for the casino

was red. The first plan was to digitally paint the building red in post. I suggested that we achieve the color through lighting instead.

"We got six 18Ks, 12 4Ks and whatever else we could get our hands on, put full CTO and Lee Primary



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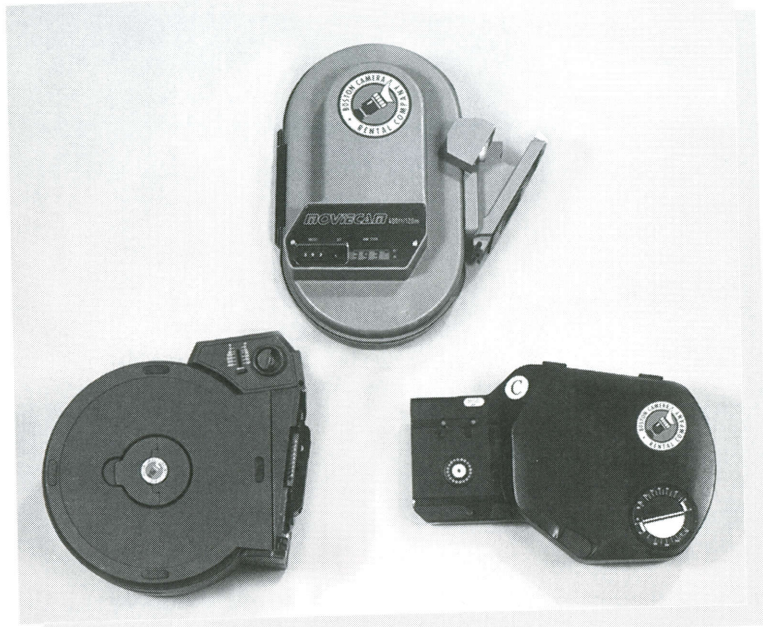
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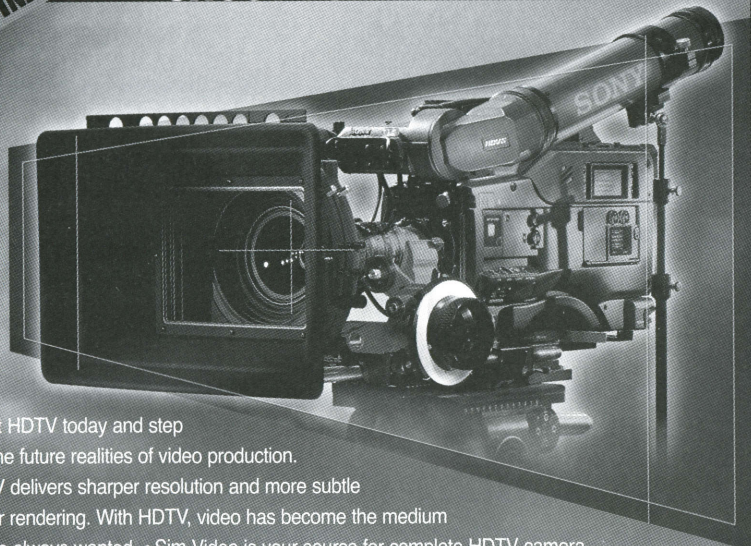
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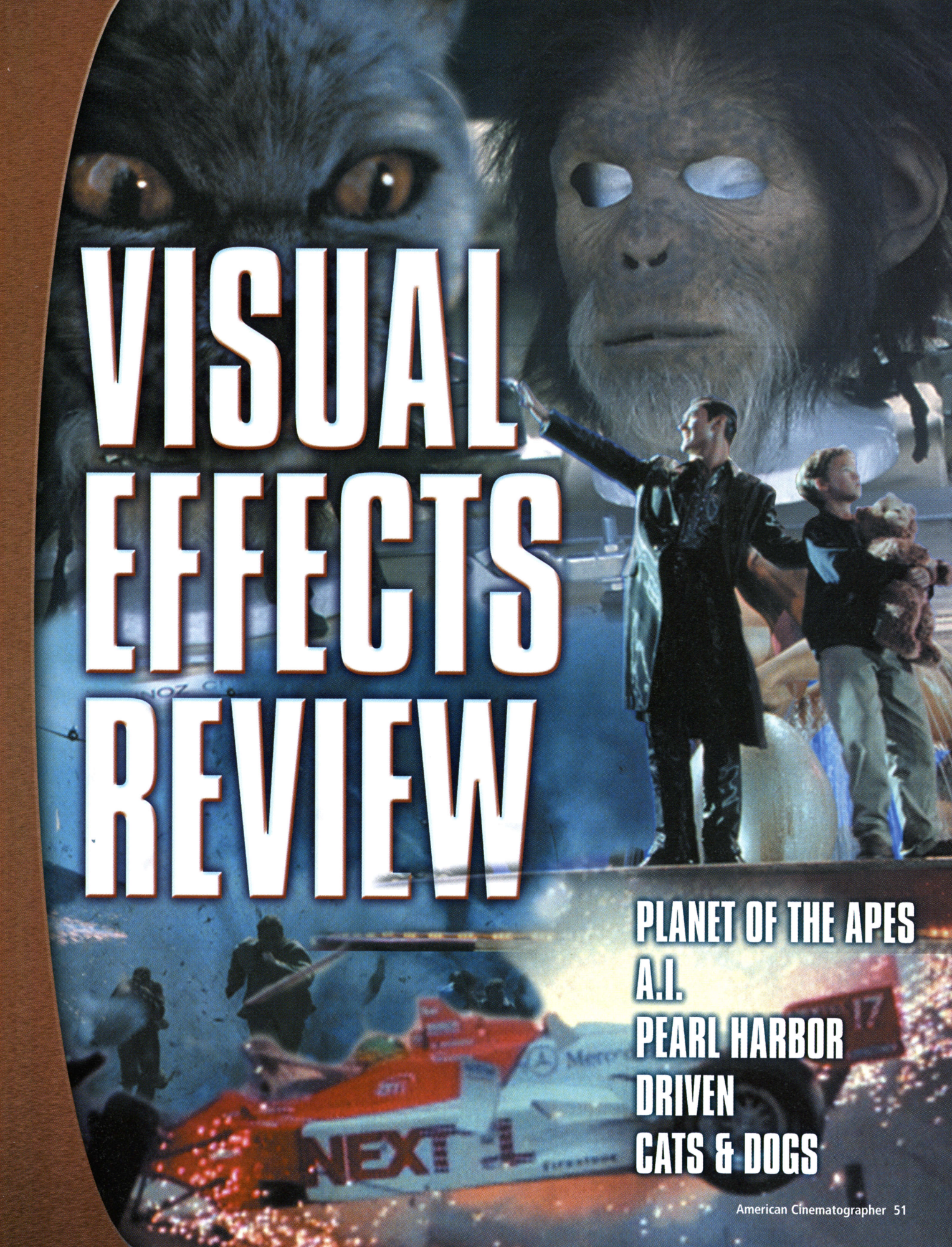
Feats of Flexibility



A scantily clad Carter fends off a surprise attack in his hotel room.

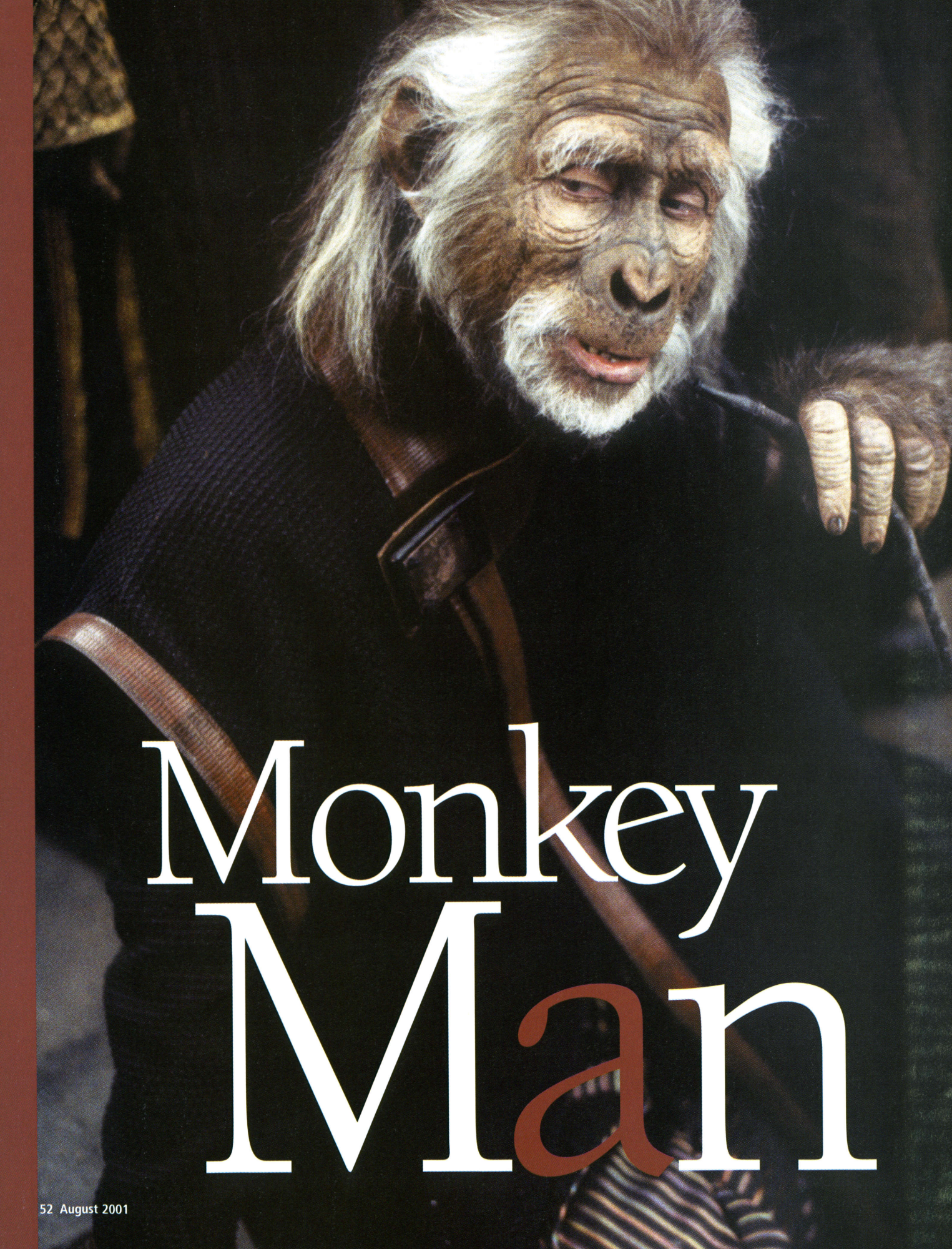
Red [106] on them, and painted the building red with light. The façade of the casino was about 200 feet wide and 15 stories high, but we got it pretty uniform from just two places. Luckily there was a balcony overhanging the front entrance and a lip around the balcony that allowed us about 10 feet of depth to hide our lamps and shoot them straight up onto the building. Then we put a Condor, hidden from the camera by the casino's sign, at the side of the building with two more 18Ks and four 6Ks to rake up the side. We managed to change the building's color from yellow to red while spending a lot less money than it would've cost to digitally paint the building in each shot.

"The whole casino pre-rig [inside and out] took about two and a half weeks to complete, but when we showed up at the set we were ready to roll. For the most part, that was how I approached the whole film, and it gave Brett and Jackie the flexibility they needed. We'd light a set for the masters and just sweeten up each shot a bit from the floor with a few instruments as we got closer — but nothing that would be too difficult to move around if we had to flip quickly. It worked out well." ■

The background is a collage of movie scenes. At the top, a large, close-up face of an ape with intense orange eyes. Below it, a man in a dark trench coat and a young boy holding a dog. At the bottom, a red and white Formula 1 car with 'NEXT' and 'Mercedes' logos, surrounded by sparks and fire.

VISUAL EFFECTS REVIEW

PLANET OF THE APES
A.I.
PEARL HARBOR
DRIVEN
CATS & DOGS



Monkey Man



Makeup master Rick Baker fleshes out simians of all shapes and sizes for the new *Planet of the Apes*.

by Ron Magid

Tim Burton's adaptation of Pierre Boulle's novel *Monkey Planet* may have been inspired by the 1968 classic *Planet of the Apes*, but Burton's film is a whole new barrel of monkeys — courtesy of Oscar-winning makeup artist and ape specialist Rick Baker (*King Kong*, *Greystoke*, *Gorillas in the Mist*).

Baker first became involved with the project in 1995, when it was to be directed by Oliver Stone. At that time, he debated whether to build mechanized heads, which would have looked absolutely real, or to

follow the lead of the original film's Oscar-winning makeup artist, John Chambers, who had designed prosthetic makeup for each character. "I wanted the look to be realistic," Baker says, "but that's not *Planet of the Apes*. Part of the charm of the original movies was that they had such actor-driven performances. Maintaining that [ethic] meant that we had to take a makeup approach."

Baker was determined to address certain limitations in Chambers' original designs, particularly the fact that the teeth were glued

into the prosthetic mouths, making it impossible for the apes' lips to move independently over their choppers. Baker's solution was to create as large a set of false teeth as possible, distorting the actor's mouth into a rudimentary muzzle that projected out to be nearly even with the tip of his nose. Baker then applied a very thin prosthetic ape face over the actor's altered features. "The idea was to try to get as much of a muzzle out of their faces as I could before we applied any makeup," Baker recalls. "When I tested that on myself six

Opposite page: Makeup maestro Rick Baker tries out his own design while making a cameo in the film. This page: Although actors portraying major ape characters underwent a complete transformation involving complex makeups, full-head masks sufficed for extras and background players. Baker's makeups for the film were divided into three categories: Number Ones (custom makeups sculpted specifically for each actor), Number Twos (generic makeups designed to fit anybody) and Number Threes (full-head masks that fit around the extras' eyes and allowed them to move their mouths).

Monkey Man

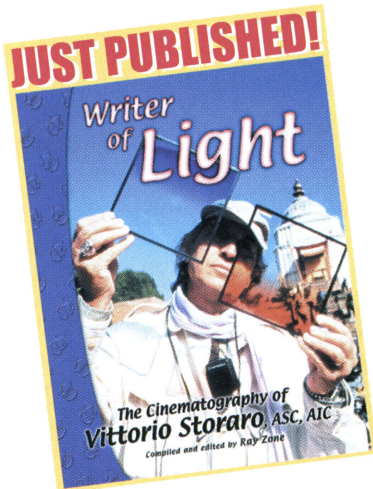
At the Toyfair convention held in New York this past February, Baker and a pair of makeup specialists demonstrate their expertise by applying gorilla makeup to a volunteer.



years ago, I made the biggest pair of teeth I could possibly plant in my mouth so I would have as little rubber on me as possible. I have a good-sized nose, so I needed to make a huge set of teeth and really push my lips out just to get it to the tip of my nose. The problem was that my lips kind of flapped down to the floor when I took the teeth out! After I did the first test on myself, I thought I should do a test on someone with a better face — a smaller nose and a longer upper lip. That test was much more successful!”

By the time Baker was hired to work on Burton's project six years later, he knew exactly what facial characteristics would best suit the prosthetic makeup. “I told Tim in the very beginning that casting would be really important, because the physiognomy of the actor's face would greatly affect how well the makeup worked and how convincing it looked,” he explains. “But then they cast Tim Roth as Thade, a chimp who's the villain of the piece, and he has a bigger nose than I do! I said, ‘This is about as bad a face as we can possibly get for an ape, but he's a good actor, so we'll make it work.’ Tim probably had bigger dentures and more foam on his face than anybody else, but I think he turned out to be one of the more interesting apes in the movie. The fact that he has a bigger nose makes his character look different right away.”

Once the actors were selected, Baker's crew made dental castings of their mouths and created positive casts over which they sculpted upper and lower ape dentures, which they then molded and cast. When the dentures were fitted over the actor's own teeth, they pushed their lips out into the muzzle-like orientation Baker desired. Next, a lifecast was made of each actor wearing the dentures, over which Baker and his crew sculpted the actual ape makeups. Baker then made prosthetic pieces by injecting foam latex into

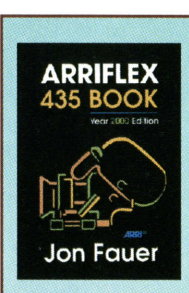
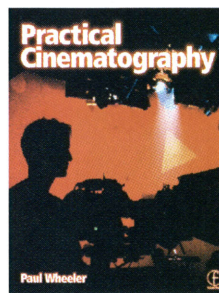
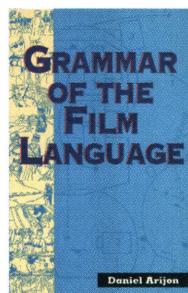
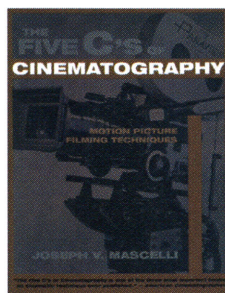
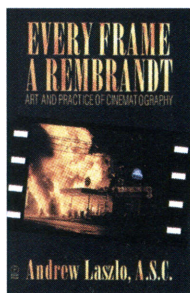
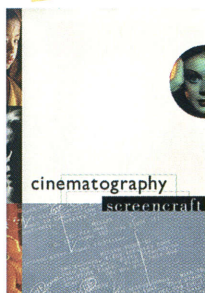


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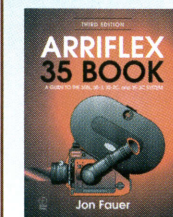
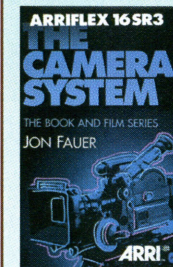
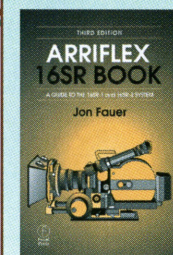
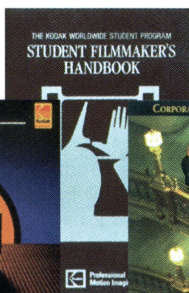
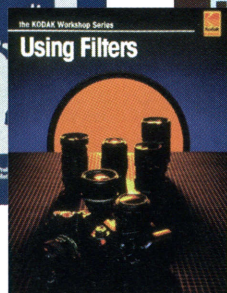
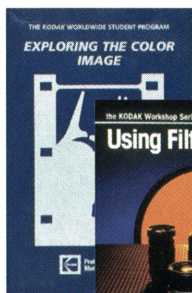
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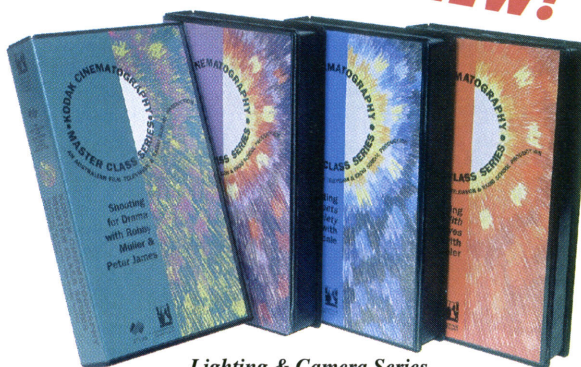


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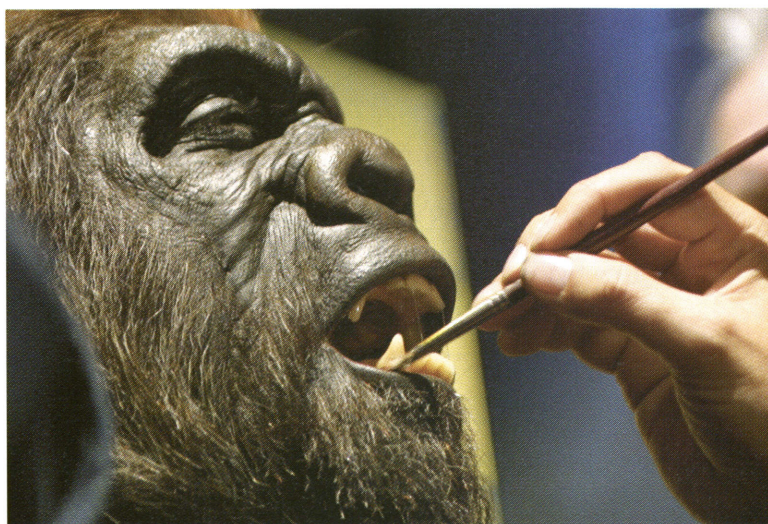
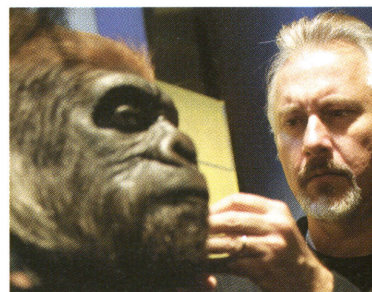
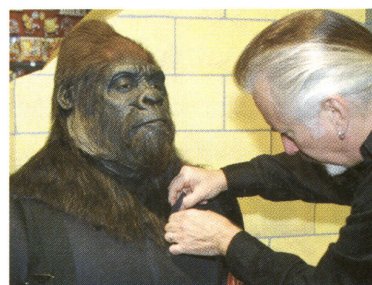
Monkey Man



In another series of photos taken at the convention, Baker tweaks some fine details on his volunteer.

molds — essentially the same material and technique Chambers pioneered for the original film. “My approach was very similar to his work in many respects,” Baker acknowledges. “There’s a major face piece for most of the apes that includes the brow and the upper muzzle, and there’s a lower chin. Because the teeth are independent from the muzzle, the noses don’t protrude as much as the original film’s makeups did, but I think the performance is really what’s important. The idea was ‘less is more.’”

Chambers’ makeups trans-



formed only the actors' faces, but Baker also wanted to change the shapes of the actors' heads so that they would look more apelike. Whereas Chambers had fitted large prosthetic chimp ears over the actors' ears, Baker first created a foam latex piece to cover each ear and make the skull appear rounder, and then added fake chimp ears over that. "I wanted to cover the actors' ears so I could raise the chimp ears, because they're really higher up on the skull," Baker explains. "We put a thin plastic bald cap on the actors and added appliances to both sides of their heads to widen the skull and provide a place for the ears to glue onto. We originally made the ears in silicone so they would flop around and be translucent, but they wouldn't stay on through the course of the day. So we ended up with very thin, translucent slip-rubber ears, which were much lighter."

Baker took a similar approach to making the massive, wrinkled cheek pads of the orangutans, creating a U-shaped cowl with the ears already attached. This appliance went on over the facial makeup. "The big cheek pads were water-filled, so they jiggled around," he reveals. "Some of the hairs are punched into the foam piece itself, and others we had wigs for. I used the cheek pads to give the male orangutans a bit more elegance."

Whereas the original film's gorillas looked like bikers with slicked-back hair, Baker's are more anatomically correct. "They have a rubber cowlpiece covered with short-cropped hair that gives them crests, like a real gorilla has, and the ears are part of it," Baker says. "We also gave them massive neck muscles. One of the first things that go on the gorillas is this kind of yarmulke, which we anchor to the actor's hair. Then we put the cowl over it, and these big neck muscles snap up into the yarmulke. We

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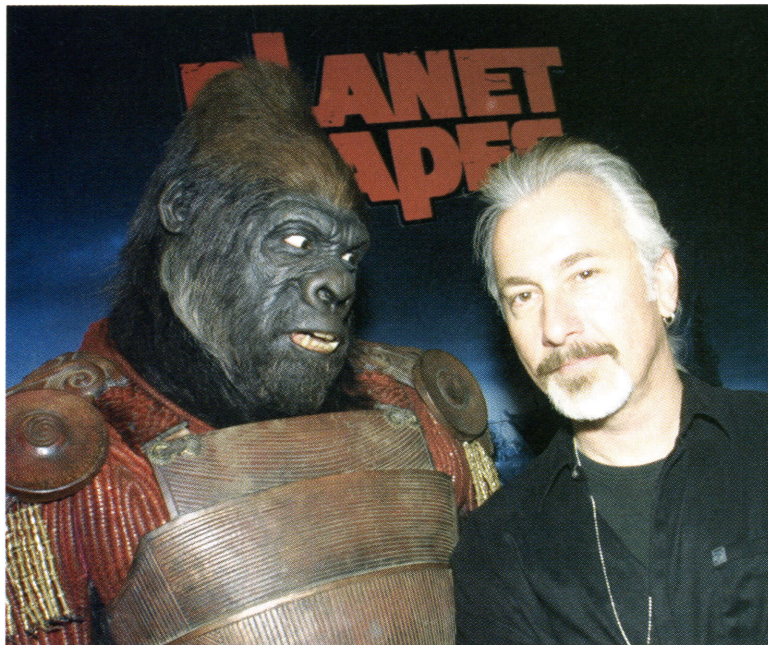
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Monkey Man

After applying the finishing touches, Baker poses with his hirsute creation.



stopped at the necks.”

Because of the large numbers of makeups required to create a planet full of apes, Baker relied on

the system he had developed to handle the Whos in Whoville — up to 90 a day — for *How The Grinch Stole Christmas*. “On this film, we

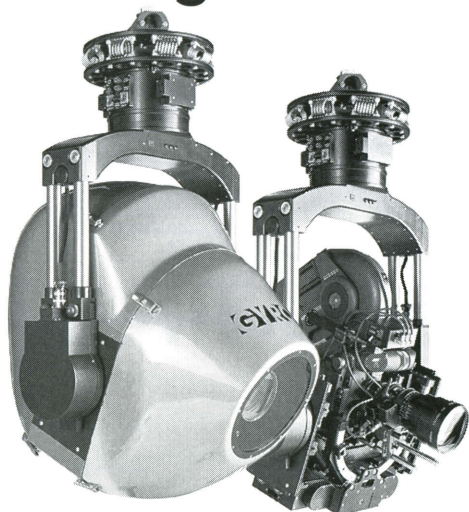
had three different levels of make-ups,” Baker says. “Number One was the custom makeup sculpted specifically for each actor, Number Two was generic makeup designed to fit anybody, and Number Three was a full-head foam mask that fit around the extras’ eyes and allowed them to move their mouths without being glued on.

“There were also a few Number Ones that weren’t quite custom-made,” he adds. “I thought we should make some generic Number Ones, and it was a good thing we did, because on a daily basis I heard, ‘Hey, we need more gorillas. Can you do somebody else as a gorilla?’ Even though those pieces weren’t custom-made, the makeup was just as good.”

Baker’s team also made dozens of rubber “Halloween masks” with different expressions to populate backgrounds quickly.

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These were a vast improvement over the static rubber masks used in the original movies. "All of those masks had the same expression, and they really stuck out. Even as a kid, I thought, 'It's not *that* hard to sculpt another face. I don't understand,'" Baker says. "I don't know how many different sculptures we did of each type of ape, but we have dozens of different-looking gorillas, chimps and orangutans. We made hundreds of slip-rubber masks with different character looks, but they were all finished as if they were Number Ones. They have beautiful paint jobs, and the hairs were individually punched.

"My experiences over the last 30 years tell me that if the guy is supposed to be in the background, he's going to show up in the foreground," he observes wryly. "With the approach we took, at least they *looked* good if and when they



Baker and an assistant fine-tune an elder.

showed up. Also, if the hair had simply been glued onto the rubber masks, they'd have had no hair left after a couple of weeks of filming. By

punching the hair in and sealing the mask on the inside, the hair stays. They were more work to make, but less work to maintain." ■

01 VISUAL EFFECTS

01	02	03
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Views of the Future



Industrial Light & Magic artists Dennis Muren, ASC and Scott Farrar develop visualization tools for *A.I.* that might revolutionize visual-effects filmmaking.

by Ron Magid

E.T. might want to phone home after a visit to *A.I.*'s Rouge City, an adult theme park that would make a Las Vegas madam blush. Just remember that the late Stanley Kubrick originated Steven Spielberg's sci-fi drama, and the *Clockwork Orange*-style visual cues suddenly make perfect sense. But there's more of Kubrick here than meets the eye: Spielberg's quest for innovative approaches to filmmaking, an enthusiasm Kubrick shared, has yielded a technology that may well change the way visual-effects movies are made.

Since film first turned in motion-picture cameras, directors have struggled to create shots that look real but defy reality, without diminishing the drama of the story. In the digital age, only a handful of auteurs have been able to create powerful emotion amid visual-effects spectacles; James Cameron, Robert Zemeckis and George Lucas come to mind, but Spielberg is the undisputed master. Much of the success of these "effects auteurs" is due to their ability to imagine, beforehand, complex shots involving miniatures, live action and digital effects. Alas, filmmakers who aren't as gifted in the arena of visual effects have sometimes found their efforts severely curtailed by an inability to visualize the result.

Two amazing technologies developed by Industrial Light & Magic for *A.I.* will change that, enabling all filmmakers to create spectacular images without having

to juggle all of the elements of the finished shots in their minds. Although ILM's breakthroughs were readied late in the game on *A.I.* and only impacted a single sequence in the film, it's likely that these new techniques will play a significant role in all aspects of future effects filmmaking.

Spielberg realized early on that one of his greatest challenges would be balancing emotion and spectacle in Rouge City, an adult theme park filled with suggestively shaped buildings whose design is based directly on Kubrick's storyboards. Spielberg challenged ILM co-visual-effects supervisors Dennis Muren, ASC and Scott Farrar to help him create the art-deco-and-neon cityscape without sacrificing its emotional potential.

Kubrick invited Muren to be his visual-effects supervisor on *A.I.* during Thanksgiving of 1993, when Muren was fresh off *Jurassic Park*. After some preliminary tests, Kubrick decided that effects technology still wasn't ready for *A.I.*, and he moved on to make *Eyes Wide Shut*. Muren says Kubrick's influence on *A.I.*'s visuals was nonetheless profound — the visionary director had artist Chris Baker draw some 1,500 storyboards and conceptual drawings. "Chris worked with Stanley for six years, and he only met him three times in all those years," Muren says. "When Steven got hold of *A.I.*, he showed me the boards that Chris had done. We tried to follow those concepts pretty faithfully, but

Steven has written the screenplay, embellishing Stanley's idea and Stanley's story, so the film has Steven's sensibility."

Once Spielberg and production designer Rick Carter locked down the design of Rouge City, it became clear that the locale was too imposing to be created on soundstages alone. With buildings shaped like art-deco odalisques and towering Wurlitzer jukeboxes coupled with gaudy neon, Rouge City demanded the use of every visual-effects tool in ILM's kit, from 8'-tall miniatures to 3-D digital models and 2-D matte paintings. "It would have been too expensive to build Rouge City full-size," Muren explains.

Still, Spielberg wanted to concentrate on telling the story, not the mechanics of making shots. He wanted to direct the complex effects sequence the way he would live action at a real location. ILM devised a two-pronged approach that would enable him to do that, one for preproduction, the other for use on set. The tools gave Spielberg exactly what he was looking for: the ability to walk the streets of Rouge City — all of them, not just the physical ones that would be built on a Universal soundstage — and let inspiration strike.

For the first prong of the approach, the team at ILM created a previsualization system based on a videogame engine that allowed Spielberg to move a virtual camera through rough mock-ups of sets and make adjustments to the potential

Opposite page: *Gigolo Joe* (Jude Law) reveals the decadent splendors of Rouge City to David (Haley Joel Osment) and Teddy in *A.I.* The look of this opulent adult playground was based upon storyboards commissioned by the project's longtime caretaker, Stanley Kubrick, and drawn by artist Chris Baker.

Views of the Future

These three photos show the key elements that were composited to create the finished Rouge City vista on page 60. From top to bottom: Law and Osment stand before a bluescreen within a soundstage; the miniature setpiece of the "Tails" nightclub; and a digital matte painting depicting the surrounding buildings set against a turbulent sky.



architecture, as well as begin to make shot selections. Basically a turbo-charged storyboard tool — and as simple as playing Quake — the technology allowed Spielberg to take a virtual tour of Rouge City before any of it had been built, virtually or physically.

Just days before shooting began on the 40' x 100' Rouge City set, which was housed within a Universal soundstage, ILM's artists brought some real artificial intelligence to bear on the second prong of their approach. Muren, Farrar and their team created an entirely separate technology that helped Spielberg capture the location's spectacle without sacrificing the story's drama. Incorporating a system developed for the BBC's News and Sports, ILM devised a real-time, image-generating compositing system called On-Set Visualization, which used some 800 barcode "targets" and a video camera to sync effects elements with the on-set action captured by the motion-picture camera. "It literally was ready three days before we shot," Muren says. "We didn't build it all; I gathered a bunch of systems and [combined them to] put it together. It's not made to do this, but we got it to work. We were trying to determine which computers to use, and we had narrowed it down to two software systems — one PC-based, the other SGI-based. We chose the SGI-based system for its dependability, and because the images looked better."

In another innovation, the targets used to determine the camera's orientation to the set were plastered all over the soundstage ceiling, 35 feet above the action, instead of on the bluescreen, which would degrade the quality of the backing. "Each barcode is different, so as long as we have a number of barcodes in the video camera's shot at any one time, the system can immediately tell what direction the camera's looking in," Muren says. "We created everything in three directions, but we

Stan Winston Studio salutes

Janusz Kaminski

on his amazing work for A.I.

Thanks for making us look good.



Mr. Roboto

Much of the artificial intelligence on display in Steven Spielberg's *A.I.* was created by Stan Winston Studio. Even before his name became synonymous with the robots in the *Terminator* saga, Winston began his career by designing the robotic tin man in *The Wiz*, and received his first Oscar nomination for the robot design and makeup for *Heartbeeps*. *A.I.* was therefore something of a homecoming for the effects wizard.

Beyond devising robotic-looking makeups for stars Haley Joel Osment and Jude Law, Winston's crew created many synthetic characters using every tool at their command. "We designed all of the robots in *A.I.*, and every one is different. We pulled out every trick and every technique we've ever used, from character makeups to robotics, from simple rod puppets to hydraulic robots. It was a huge endeavor."

Although some of the film's robots are quite unusual, Winston's team didn't simply dream up the weirdest designs they could imagine. "Form follows function in many ways," Winston states. "We wanted to create characters that were designed to serve a purpose. Each and every robot in the movie was literally on the call sheet as a particular character, and each character had a particular purpose."

One of *A.I.*'s most unique robots looks like a futuristic copper water heater with a human head, but in place of its face is a TV screen displaying a projected image that delivers dialogue. "That was a brain-storm of Spielberg's," Winston says. "We had to create a new technology to make it. There's an actor in prosthetic makeup, a projection system, and a hydraulic robot body, but what you see onscreen was all there on set." Winston's breakthrough was a self-contained mini-projection system



within the head of the robot, tied to an offscreen video camera aimed at the actor in prosthetic makeup. "We were able to have the actor acting with his performance projected onto the face of that robot in real time," he explains. "We were actually able to control the brightness of the TV image, and we worked with Janusz Kaminski, ASC to balance it properly so it would read on film."

However, Winston's greatest challenge was Teddy, David's 2'-tall, talking animatronic bear. "Teddy is a principal character," Winston says. "He worked literally every day and was probably the roughest job our studio has ever had. He has more movements, more controllability, more ability of performance in a smaller package than any creature we've ever done."

Teddy was capable of making more than 50 moves. "There were 24 moves in the face alone," Winston says with pride, "so Teddy had a range of expressions and the ability to lip-sync and converse that is beyond anything we've done before. We were able to pre-record dialogue so Teddy would have his dialogue memorized, so to speak, and be able to play the scene with the other actors. But Teddy could also ad lib, just like any other actor, if Steven needed him to say something different at a particular time."

Of course, Teddy couldn't perform the way Spielberg wanted and still be entirely self-contained. "It's impossible to fit all of the servo

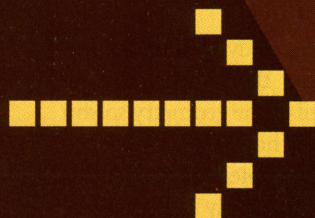
motors inside a small package like Teddy," Winston admits, "so we had a service box of motors off-camera that were connected to him umbilically."

The studio made a number of different versions of Teddy. "In addition to the hero Teddy, we had a self-contained, animatronic version carried by David that had no umbilical. We also had a rod-puppet Teddy and a stealth Teddy, which was cable-controlled but wasn't operated with servos, because servos make a lot of noise. We even had a stunt Teddy, as well as a series of different hero heads that we used to take the performance beyond the range of expressions that any one particular hero head could do. All of Teddy's bodies were interchangeable with each hero head."

While Teddy was brought to artificial life via a marriage of Winston's mechanics and Industrial Light & Magic's digital technology, it might be difficult to figure out whose shots were whose. "Don't assume too much," Winston urges. "Teddy walks, and it's not CG — there's a walking rig behind him. From day one, Steven expected to use the animatronic Teddy whenever and wherever he could. We worked very closely with Rick Carter in the art department and built as much pre-rigging as possible directly into the set. Raised sets were built to accommodate puppeteers to hide their rigs and rods. Whenever possible, the set dressers would make doubles of furniture, or even special furniture, that was Teddy-friendly."

Despite all of the technology Stan Winston Studio employed to create *A.I.*'s true artificial intelligence, Winston maintains that the work is all about performance. "This movie is not about the technical, it's about the heart and soul of the characters, and our techniques followed that [theme]. I consider an enormous amount of our work in the film to be high-art but low-tech — very artistic, but also very simple."

—Ron Magid



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couldn't do reverses because we didn't have the bluescreen in that direction. We could go up about 18 feet from the ground, and we could do handheld shots. It was pretty great."

Spielberg still had to direct against a giant bluescreen, but for the first time he didn't have to imagine what each shot would ultimately look like. The bleeding-edge technology enabled the filmmakers to see a crude version of the final shot, including the actors and CG models, on a monitor. "Steven likes to walk onto the bluescreen set and get [ideas for] shooting the sequence," Muren says. "This way he could see a composite of the characters, the street set, and all of the 12-story [CG and miniature] buildings in real time. The quality wasn't perfect, but he could see all of the compositions."

Muren, who came to visual

"Every cameraman I know, every visionary guy who's played with this, immediately picks the camera up and tries it handheld, and he can't believe it."

—Dennis Muren, ASC

effects with an extensive cinematography background, is excited that On-Set Visualization can give the director and cinematographer more control over visual-effects sequences while they're on set. "It's a director's tool, and the cinematographer can help with the framing," Muren affirms. "My hope — though we

didn't get this ready in time for *A.I.* — is to have the lighting sort of baked into all of the geometry so you can see exactly how it will look."

Another potential dividend is the ability to apply all camera-motion data from the set to the miniature photography and CG elements. "[The tool] was never made to do that, and the tolerances are such that it shouldn't be able to do it, but it could have worked for *A.I.* because our tolerances weren't quite that exact," Muren acknowledges. "Eventually we'll be able to track the camera movements within about 95 percent, but we didn't have time to even test that. We tracked the camera data in post, and then played it back on the motion-control stage to shoot the miniatures."

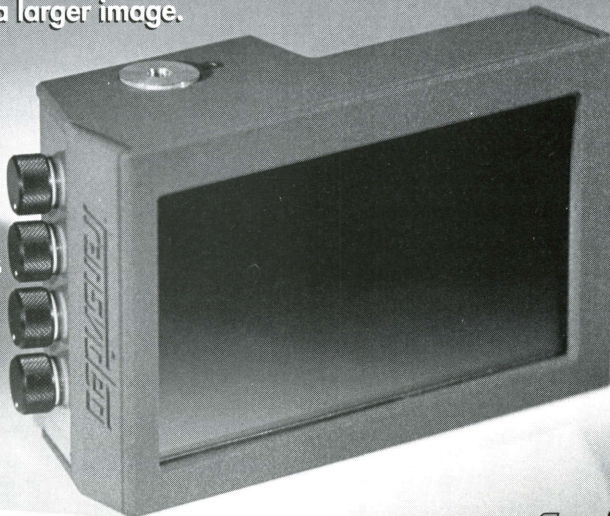
Even without all the bells and whistles that will certainly be in place for On-Set Visualization 1.1, the

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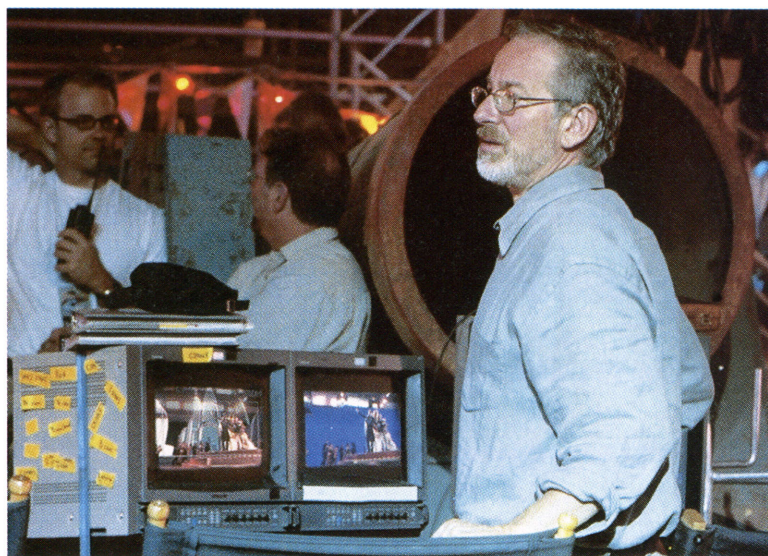
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system is already making waves. "Every cameraman I know, every visionary guy who's played with this, immediately picks the camera up and tries it handheld, and he can't believe it," Muren says with a grin. "They just walk around with the camera and see the real-time composite, and everything's right there. It's not an end-all, but if you're trying to put characters in a synthetic scene or trying to put something synthetic in the background, and you want to be creative about what view you use, it's great."

Although ILM only employed its new previsualization system and On-Set Visualization systems for about 10 shots in the Rouge City sequence, the tools' impact will likely resonate well into the future. Spielberg's desire to work unhampered by effects technology has made the most complex effects work



Director Steven Spielberg takes advantage of ILM's advanced previsualization system while creating the Rouge City sequence on the virtual set.

simple for even novice directors. But for Muren, who was so close to Kubrick during the project's early stages, the satisfaction of seeing the film finally get made dwarfs any technical accomplishment. "It could

have just stopped [with Kubrick's death] and disappeared, and nobody ever would have known anything about it," he says with a sigh. "I'm so relieved that it's actually been made. I'm still pinching myself." ■

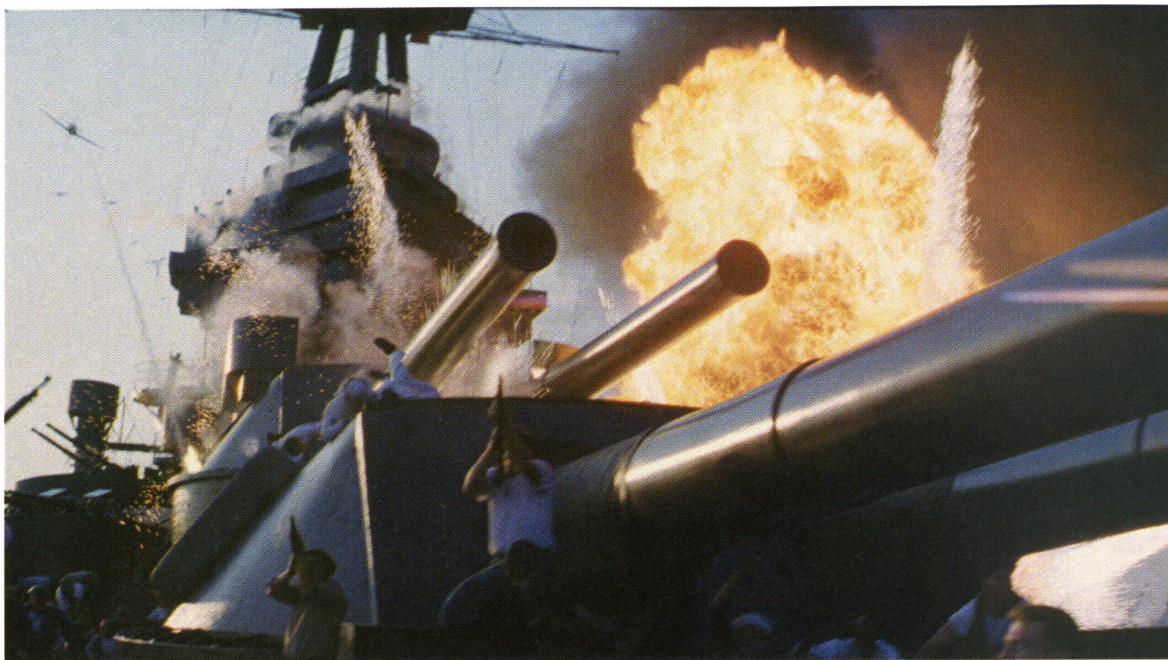
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Allied Powers

The World War II sneak attack reenacted in *Pearl Harbor* is an eye-popping hybrid of practical effects and digital wizardry.

by Ron Magid

Unit photography by Andrew Cooper, SMPSP

When director Michael Bay decided to take on *Pearl Harbor*, he knew he would have to make the legendary Japanese sneak attack on the U.S. Navy base in Pearl Harbor, Hawaii, look as real as possible. He used every weapon in his arsenal to craft a “day that would live in infamy,” from full-scale action props (courtesy of John Frazier) to digital destruction (wreaked by the SGI hard drives of Industrial Light & Magic).

Months before the film’s script was finalized, Bay reteamed with producer Jerry Bruckheimer (*The Rock*, *Armageddon*) to begin prepping *Pearl Harbor*. “I began reading all about the attack and meeting with historians, and I tried to pick the seminal events within the attack, events that I could shoot to show the essence of what happened,” Bay recalls. “I hired five animators to come up with animatics of the attack, something I’d never done before. We laid out our crude digital

ships and planes over a satellite image of Pearl Harbor and started deconstructing all of the epic shots I wanted in the movie. Instead of going with a bazillion effects shots, I wanted to spend money on the really massive effect shots and get as much real stuff [as possible] in-camera.”

When an in-camera approach wasn’t possible, the filmmakers relied on full-scale recreations from practical-effects supervisor Frazier and the digital wizardry of the ILM team. The challenges the sequence presented to



The practical effects required for *Pearl Harbor*, which were carried out by John Frazier and his tireless crew, included thousands of bullet hits impacting the ground, which had to be timed to the strafing runs of real planes and camera helicopters outfitted with machine guns.

all involved were legion. Bay had only nine Japanese planes to represent the 186 actually involved in the attack, and the 1940s-era U.S. Navy fleet had largely been scrapped. Also, the base at Pearl Harbor, though largely intact, was a historical landmark and had to be treated with respect.

Nevertheless, the company was ready to roll at the hallowed Navy base in February 2000. For the six weeks it took to shoot the bombing of Pearl Harbor, the barrage of bullets and bombs that besieged the base was Frazier's province. His team created thousands of bullet hits impacting the ground — timed perfectly to the “strafing runs” of real planes and camera helicopters outfitted with machine guns — using Number 2 blasting caps with a spacing rod

between each cap. “We’d throw them out on the surface of the tarmac along with packs of Ziploc bags with a little secret sauce — some cork and a little dust — and we’d paint them so you couldn’t see them,” Frazier reveals. “The first charge ran down the shot tube and set off that first blasting cap, which ignited the next shot tube and cap, and so on. It happened so fast that all you’d see was dust going up in the air.”

Frazier was also charged with recreating the bombing of Pearl Harbor — a formidable task that included launching airplanes into the actual buildings without blowing up the base all over again. “We built a big tube with compressed air behind it and launched a couple of full-scale American planes and quite a few

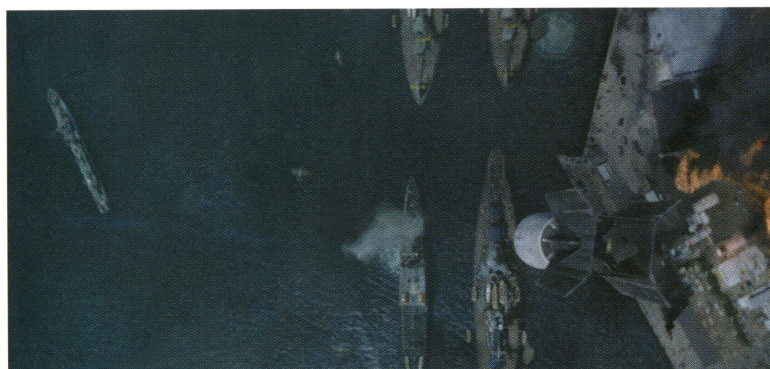
[Japanese] Zeros into some real towers; the planes were [shells] made of fiberglass and sheet metal that had nothing inside of them,” Frazier says. “Some of the buildings’ walls were five feet thick, so we’d put a one-inch-thick trench plate up against the wall, paint it gray, add some architectural lines to it and slam a plane right into it.”

Planes and buildings were fairly simple to “destroy,” but what about battleships? Bay originally thought that a large chunk of ILM’s visual effects would be devoted to adding U.S. ships and explosions, but when the director first walked the harbor, he noticed an awful lot of battleships being retrofitted nearby. The ships belonged to the Navy’s inactive fleet and were slated for



Allied Powers

For these “bomb’s-eye views,” ILM created a CG bomb that was composited into plates that were shot at various altitudes by aerial cinematographer David Nowell.



target practice in foreign countries, but after nine months of negotiation, 17 of them became casualties of Bay’s war. “We blew up the mothball fleet right in the harbor, and we didn’t sink any,” Frazier attests. “It was all simulated, but you’d swear they were

going down. Four of them went up on the second day, and then two days later we blew up another three. We did the biggest one, which we called Big Shot Six, first. We studied the engineering specs, located the main bulkheads, and then designed the

look Michael wanted using 4,000 gallons of gasoline, 500 sticks of dynamite, 1,000 feet of primer cord, and 2,000 gallons of diesel fuel to create that ‘black smoke.’ To simulate [the torpedoes] blowing holes in the sides of the ships, we rigged some of the compartments to blow up. We shaped our explosives in a manner that cut out the down motion, and we also occasionally used one-inch trench plates to take the force of the explosions off the ships. We also built set pieces, including some of the big guns, and blew them up.”

Although Bay covered Big Shot Six from the ground with seven cameras, he insisted on getting the aerial perspective as well, which demanded very careful choreography — as well as a fair degree of luck, because there could be no Take Two. When luck wasn’t enough, the filmmakers relied on ILM, which delivered around 300 shots that pushed the scale of the action to epic proportions. “Michael had nine Japanese planes and no true period battleships that we could do anything to,” confirms Eric Brevig, visual-effects supervisor and second-unit director. “We filmed on the *USS Missouri* and the *USS Texas*, and we had mock-up planes and real Japanese Zeros fly by, but that’s all in close-up. For the shots that show off the scale of what’s going on — and there are lots of them! — we filled the harbor with period ships, digitally painted out modern-day ships, and created all of the devastation that couldn’t be done full-size. We put in 50 airplanes, ships blowing up, and ships that are halfway sunk.”

Although ILM’s model shop built a highly detailed 1/30-scale miniature battleship for certain shots, most of the planes and ships were digital models. The CG battleships were populated by hordes of digital sailors, which were created using a program that ILM wryly dubbed “Hello, Sailor.” ILM’s artists spent a year perfecting digital fire and smoke to enhance the destruction.

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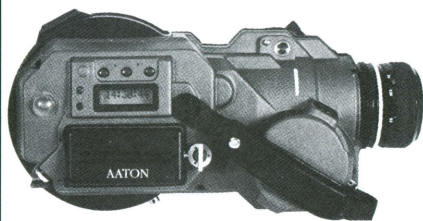
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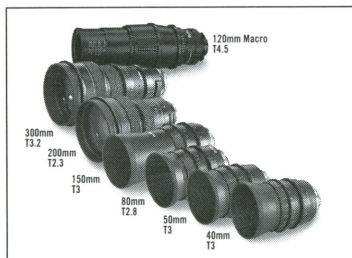
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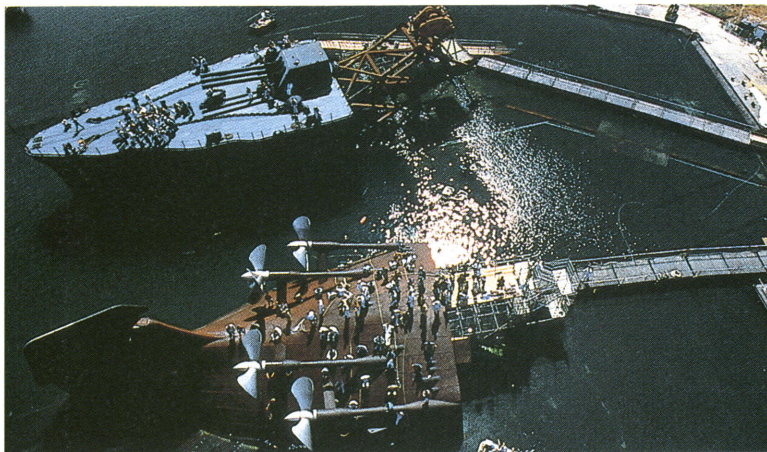
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Allied Powers



Among the digital effects carried out by ILM was the "completion" of the *USS Oklahoma*. A 200-foot section of the doomed ship was built and placed on a gimbal, and ILM digitally extended that into a full-size battleship for aerial and long shots of the harbor.

"Wherever we could, we shot real smoke and fire elements," Brevig says. "But in so many cases, the scale we were working in wouldn't allow for that. We couldn't create the black smoke event we needed, because it's against environmental laws in the United States!"

Bay insisted that ILM's digital airplanes be absolutely indistinguishable from the real ones. Modeled in 3-D in ILM's computers, the digital planes were extremely detailed. All of the surface detailing — including rivet patterns, panel indentations and other irregularities — were projected onto the models using actual photographs of real aircraft. The planes were then differentiated through varying color schemes, graphics, and hardware; some had bombs, and others had torpedoes.

It might seem that animating an airplane moving from Point A to Point B at a constant speed wouldn't be hard. "That's what we thought!" Brevig says with a laugh. "[But the planes] were being shot at by sailors on the ships they were bombing, or they were flying at about 200 mph through a gap between ships that's 30 feet wide, or they were dogfighting — and all the while we had Michael Bay saying, 'It's got to look cooler than that!' All of those factors caused us to move our planes in ways that

pushed reality and the physics of what airplanes can survive. Our planes never went from Point A to Point B — they slid all over the sky, like cars racing in the Indy 500. Usually our CG planes hit something, crashed and burned, or shot each other out of the sky, so we didn't have the luxury of making a lot of planes fly calmly for very long. The need for absolute perfection in matching real planes was frequently put to the test.

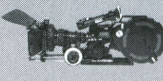
"There's a shot where some Cub Scouts see 50 Japanese planes coming through a valley," he continues. "The first plane and the 13th plane are real, and the others aren't. We had make sure you couldn't tell the difference, and then we had to make the CG planes fly differently so they didn't look like they were cloned. You might think 'the more planes, the easier,' but [the number of planes] actually made it more difficult because you'd notice repeat planes or repeat flying animation. It was always boring when the real planes flew normally, so Michael would have them roll a bit just to keep it alive onscreen. The same idea applied to the synthetic planes. Our animators actually adjusted the rudders so the planes tipped down a little on one wing, compensated, and then overcompensated."

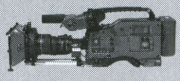
The CG planes that blew up were completely different models complete with skeletal insides and mechanical guts, and they were designed to break into pieces. "All of the pieces that came apart on the animator's model had to be different colors so the animator could see what he wanted to rip off and at what time," Brevig explains. "In the final shot, as the plane broke apart, its insides were revealed and animated. To finish the task of making it completely photorealistic, we layered fire and debris, and everything else that comes along with blowing up a plane, into the shot."

ILM used essentially the same approach for destroying the *USS Arizona*, a significant moment both historically and dramatically. The problem was that actual footage of the battleship's destruction wasn't very dramatic. "It was a big explosion, but it wasn't interesting visually," Brevig observes. "Battleships are so big that they actually stress when they blow up, so we [decided we] wanted to see this 600-foot metal ship 'flex' briefly before the explosion ripped through its skin. That's something we could only do with CG. We custom-built a CG *Arizona* so we could make the deck buckle and the hull begin to rip apart at the seams as the explosion came blasting out. We created two angles on the destruction and milked it for several seconds, which took months of painstaking work."

No matter how advanced computers get, Bay understands that there is something heart-stopping about capturing certain events on film for real. He therefore challenged Frazier to "roll" the *USS Oklahoma* over after it was torpedoed. "The *Oklahoma* was the symbol of American might, and it sank in nine minutes," Bay explains. "I wanted to do that for real, so we built a huge section of the ship in the tank [at Rosarito Beach Studios in Mexico,] where James Cameron shot *Titanic*. You get a sense of realism when





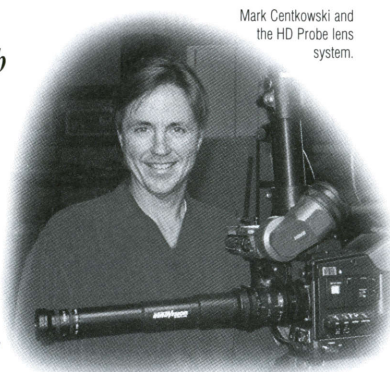

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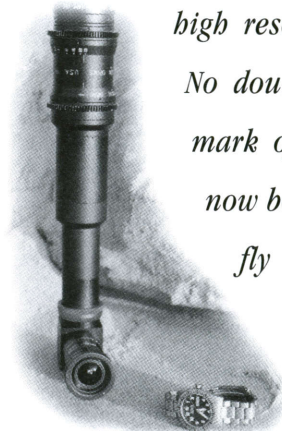
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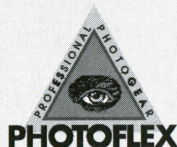
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Allied Powers

you've got 300 stunt guys on deck and in the water, with a huge ship rising over them. It was funny to see *Titanic's* huge poop deck dwarfed by this massive battleship. It was an engineering feat, and John's team got it to work."

Frazier's previous bout on the high seas, *The Perfect Storm* (see *AC* July '00), netted him an Oscar nomination for building the world's largest gimbal to toss the doomed fishing vessel *Andrea Gail*. But that rig was miniscule compared to the hardware Frazier's team developed to turn a 200' portion of the *USS Oklahoma* upside-down in the Rosarito tank. Frazier explains, "We built a third of the *Oklahoma* out of solid steel from the bow to behind the first set of guns, and that section was then cantilevered so it could rise 30 feet out of the water, turn and roll all the way over." Working with stunt coordinator Kenny Bates, Frazier's crew required the enormous power of a hydraulic crane, counterbalanced by 100 1"-thick, 6' x 8' trench plates, to roll the ship a full 180 degrees with 250 men clinging to it as two more major explosions rocked the boat.

For the wide shots, Bay asked ILM to add background action as well as digitally extend the 200' *Oklahoma* set. "We had our VistaVision camera hanging in a Wescam gyro stabilizer from a construction crane, literally flying 15 feet above the water and pushing past the ship as it's rolling, as things were exploding and people were falling off," Brevig recalls. "It was insane. The final shot is a good mixture of stuntmen and CG people tumbling off the ship into the water as things blow up and planes fly by."

Bay concludes, "I didn't want audiences to think about the film's effects, so if I couldn't make it look totally believable I didn't want to do it. People aren't going to believe that we shot as much of this for real as we did." ■



A quarter awaits its fate in *Driven*, an action drama that required some unique contributions from Look! Effects.

Eyes on the Prize

Look! Effects provides intensely focused driver's-eye views for the high-octane auto-racing drama *Driven*.

by Ron Magid

What does a road race look like from the point of view of a supercharged professional driver who's "in the zone?" That was the challenge director Renny Harlin posed to Look! Effects when he asked the facility to create the high-stress POV of the road warriors in his speed-and-asphalt epic *Driven*. Look! Effects' artists worked directly with Harlin and the film's visual-effects supervisor, Brian Jennings, to develop a simulation of the intense focus that a driver experiences in the heat of a race. This true-life phenomenon takes place in moments of extreme concentration while the driver is traveling in excess of 200 mph — a speed that causes the racer to enter

an almost hallucinatory state as his or her concentration shifts from a normal view of the environment to a razor-sharp focus on the track. Time and space become distorted as objects in the driver's peripheral vision slow to a crawl.

Look! Effects co-visual-effects supervisors Henrik Fett and Max Ivins and a small, dedicated crew of 10 created more than two dozen test versions before arriving at a look that best captured this unique racing phenomenon. They began with a background plate they had shot from a camera car driving down a race-track. "The car wasn't even going that fast," says Fett, who co-owns the boutique effects house with Ivins, art director Danny Kim and president

Mark Driscoll. "The challenge was to make it interesting. When we began doing research and development, we had the whole toolbox open and started playing with radial blurs and rotational blurs, saturation and desaturation, always keeping in mind that we had a center of focus that we couldn't touch. After a week of tests, we got the green light and then spent about another month fine-tuning the look. In the end, we used a combination of everything."

The final effect involved some 30 elements that affected different parts of the frame simultaneously: a radial blur warps the edges of the frame, and past frames are ghosted in as a means of distorting time. "The effect doesn't really dissolve in, it

Eyes on the Prize

A competitor spins out in spectacular fashion. Visual-effects artists used a combination of radial blurs, rotational blurs, saturation and desaturation to create the intensely focused perspective of a driver traveling more than 200 mph.



grows in slowly," Fett says. "You see that there's something happening at the side with the stands, the trees and the billboards, and then it comes in with a *whoosh*. We desaturated the sky and saturated the edges of the frame, and then created a time warp using prior frames and later frames to give a sense of speed without just making the image blurry. We also added what we called a 'rifling' effect, which is a rotational blur that creates the feeling of being in a tunnel without using real geometry — it's like traveling through rings of warped air, which add to the sense of speed as they shoot by. The roadway is the

element that gets touched the least in order to show that the asphalt is still moving really fast. It's crisp, because that's what the driver is focusing on."

Using Houdini and Maya software running primarily on Silicon Graphics platforms, the effects artists had to create and apply each effect as a separate pass to the image. Although it is generally assumed that effects images that are largely photographic are relatively fast to create and render, that was not the case with *Driven*. "Because we work in a 2K world, techniques such as warping prior and later frames were extremely time-intensive," Fett

admits. "There were all of these different layers that we needed to address, and the rendering time was insane. Turning around the average shot, which was three to four seconds long, took at least a day to a day and a half."

The effect is subtly different each time it appears, reflecting the sensibilities of the individual drivers, and it isn't static. Colors become more intense as the driver's tension mounts. At times, portions of the car and the track appear to melt away, as if the driver is being transported out of the real world and into a tunnel of pure speed. "At one point, we have the front of a car in frame, which then kind of melts away as the effect comes in," Fett explains. "We translated the car out of the frame by warping the later frames with the earlier frames so the car itself was affected similarly to the area outside the roadway. We desaturated it a bit to take the focus off of it, then warped the frames so [viewers would believe] that the driver was losing sight of his car; all that's important to him at that moment is the one point in the distance on which he's focusing."

Look! Effects' manifestation of the racing experience, which Harlin dubbed "Driver Vision," became *Driven*'s signature imagery, and it cropped up in trailers and television ads promoting the film. Originally intended for use three times in the picture, the effect ultimately appeared in seven scenes. "The big challenge was not to create a cool effect, but to sell that what we're seeing is what really happens to drivers who race 200 miles per hour on a track. Why would you want to see a crisp billboard on the side? Who cares about the tip of your car? By slowly going into the effect, we focus on it. We were very lucky to work with Renny Harlin and Brian Jennings, who allowed us to push the envelope and do something that hadn't been done before." ■

Peeved Pets

The fur flies in *Cats & Dogs*, a zany comedy that gets an extra boost of lunacy from an array of effects houses.

by Ron Magid

Unit photography by Rob McEwan



Ninja cats, fearsome warriors with unequalled martial-arts skill, prepare to wreak havoc in *Cats & Dogs*.

In *Cats & Dogs*, our favorite felines attempt to take the world back from “man’s best friend.” The result is all-out war, waged by a litter of brilliant critters played by some amazing animal actors (trained by Boone Naar) and augmented by the Herculean efforts of no less than 10 effects houses. Easy sentiment was off limits, according to director Lawrence Guterman. “We weren’t just going for treacly sincerity,” he says. “We wanted irony and irreverent wit as well.”

Making household pets behave as though they could really implement their plan demanded the utmost ingenuity from lead effects houses Rhythm & Hues and Tippett Studio, as well as The Mill, Gray Matter, Matte World Digital, Digital Fire Power, CIS, Pacific Title, the Hensen Creature Shop and Wildbrain (who supplied the film’s

animated prologue). “It’s not like doing a dinosaur,” cautions Ed Jones, the film’s visual-effects supervisor. “We had to put something as natural as cats and dogs into a photorealistic, live-action cartoon without the audience focusing on the technology and artistry of making these animals talk.”

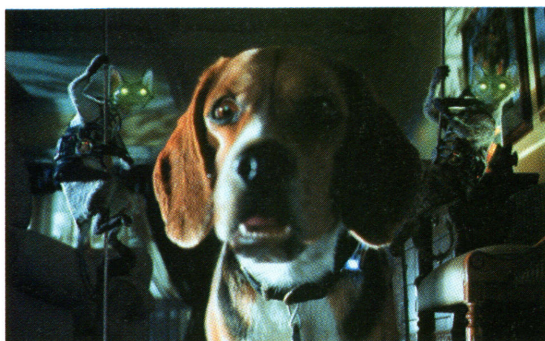
Half of the film’s 900 visual-effects shots were handled by Rhythm & Hues, where most of the artists’ work involved believably enhancing the animal actors’ performances. The required technology has improved a great deal since the company won an Oscar for giving the power of speech to the barnyard cast of *Babe*. “Rhythm & Hues created talking animals using full face replacements,” Jones explains, “but we’ve taken that technique several steps beyond what was done on *Babe*. In this film, they’re not just

moving the snout, they’re creating expressions that include animating the eyes and the whole face, in addition to syncing mouths to dialogue.”

The key was using as much original photography of each animal as possible, and then projecting the footage onto Rhythm & Hues’ 3-D animation. “That way, we got most of the face for free,” says Rhythm & Hues visual-effects supervisor Bill Westenhofer. “Our underlying digital wireframe had the right bone structure, and then we mapped on the image of the animal’s face and moved it around, synthetically replacing only the parts that we’ve obscured in the live action. It’s quite a convincing technique.”

Rhythm & Hues’ most demanding task was creating Mr. Tinkles, the mastermind behind the cats’ attempts to take over the world. Mr. Tinkles was often an entirely CG

Peeved Pets



Clockwise from the top: A power-hungry Persian, Mr. Tinkles, rallies his troops; "The Russian," a deceptively cute secret agent, shows its true colors; and Ninja spies drop in on an unsuspecting canine.

Persian cat consisting of digital fur, yet he looks completely real. Westenhofer notes, "He's the technological high-water mark of the picture for us."

The artists at Rhythm & Hues didn't simply replace faces, however. Their fully CG animals were often the film's star performers. "Once we built our CG models, we went with an anatomical simulation," says Westenhofer. "We're ecstatic with how that turned out; we could do crazy actions with the cats and dogs, and their bodies completely held together and did exactly what they're supposed to do in real life. Because the film cuts from a real dog to ours, then back to the real dog again, our animation required a very high degree of fidelity."

Other challenges involved animating the Ninja Cats, for which Rhythm & Hues did extensive research. "We brought in an animal biomechanic, who coincidentally was also a martial artist, and showed him some of the motion studies we were doing," Westenhofer recalls. "He said they were perfect, because cats are perfectly suited to doing

martial arts!"

When the Ninjas fail, Mr. Tinkles unleashes his secret weapon, the deadly secret agent called the Russian — a sweet little Russian Blue kitten animated by Tippett Studio. When humans leave the room, the Russian drops the act and begins throwing knives and boomerangs at the dogs. Tippett's chief animators studied real cats, including the hairless Sphinx and Russian Blue breeds, scurrying across a long corridor with a grid on one side and Plexiglas on the other, which was dubbed the "catwalk." Soon, the animators were making CG character studies. "They animated the cat rubbing up against a pole and jumping up and down from a windowsill to establish a foundation for the character," says Scott Souter, who supervised Tippett's work on the film along with Blair Clark. "We then started bringing the cat up on its haunches and tried to figure out how he'd catch a boomerang and walk with his weapons vest on. How would he hold a knife without fingers? Would he throw with his tail? We actually modified his paws to give them

fingers and changed his mouth and eyes to be able to get a bit more of a 'human' performance that the crowd could relate to, while still keeping it very kitten-like."

Tippett Studio's challenge throughout the project — a task shared by all of the effects houses on *Cats and Dogs* — was deciding whether a creature looked too human. "At times we took liberties with the cat's skeleton to get the performance we needed," Souter says. "When in doubt, we definitely operated within the constraints of what a cat skeleton would allow. As we progressed deeper into the movie, it was interesting to see what became believable and what didn't."

"For example, the Russian would come out of a roll, throw a knife, and then catch a boomerang, and we'd say, 'A cat wouldn't catch a boomerang like that!' Then we'd realize what that implied: we had completely bought into the idea that he'd done a flip and threw knives! It was nice that we got to that level of understanding with the characters." ■

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Exploring a New Dimension

A new
hi-def 3-D
camera rig
promises to
make stereoscopic
filmmaking easier
than ever.

by Nora Lee



A revolution is well underway in a small shop near the Van Nuys Airport. Paradise F/X, a subsidiary of Cobalt Entertainment Technologies, has designed, built and successfully tested a high-definition 3-D camera rig, and with this invention many of the reasons for not making a film in 3-D have disappeared. The ParaCam rig houses two Sony 24p HD900 hi-def digital cameras and uses both Angenieux and Fujinon lenses. It weighs less than 80 pounds, has 50 minutes of recording time per tape and runs silently. With this new technology, Cobalt has shot tests for a large number of 3-D release formats, from 15-perf to 35mm, and straight-to-digital projection. To understand the potential impact of this invention on 3-D filmmaking, a short history lesson is in order.

Humans see in three dimensions but are almost always entertained by images moving in only two. It's been that way for over a hundred

years. We have flirted with 3-D, of course, in the form of both still and moving images. The stereopticon provided Victorians with hours of still 3-D entertainment. Most baby boomers grew up with ViewMasters in their toyboxes. The first presentation of 3-D films took place at the Astor Theater in New York in 1915 using the anaglyphic system, which involved the use of red/green spectacles to create the dimensional picture. But it wasn't until the 1950s, when it became clear that even ordinary TV would threaten the motion-picture business, that real effort was put into making 3-D feature films.

More than 5,000 theaters were equipped to project 3-D after the low-budget *Bwana Devil* (1952) raked in an amazing \$100,000 in its first week. Even so, the rush to 3-D lasted just a few short years. In 1952, one such film was produced; in 1953, 27 were made; in 1954, 16; and in 1955, one. CinemaScope had become the new studio darling, and the widescreen format was so effective that it became a norm for Hollywood movies.

Since 1960, 3-D films have found a niche in special venues such as world's fairs, science centers and theme parks. Many have been made in large format, particularly 15-perf. It wasn't until the 1990s that companies such as Imax Corp., Iwerks Entertainment and MegaSystems made a concerted effort to take their large-format (LF) theaters into the commercial market. Today there are nearly 100 3-D LF theaters located around the world. This growing number illustrates the continuing interest in the thrill of a 3-D film experience, but the format is still fraught with challenges. One of the key issues — how to provide content for a relatively small number of 3-D theaters and get a return on investment — has never been far from Steve Schklair's mind.

Schklair, the CEO of Cobalt, has had a love affair with 3-D for



Opposite page: Paradise F/X co-founder Max Penner puts a prototype ParaCam through its paces. This page: Large-format filmmaker Keith Melton (left) and Cobalt CEO Steve Schklair pause while shooting extreme sports with the digital 3-D camera.

most of his eclectic career. He is a University of Southern California film-school grad who has worked as a 3-D cinematographer, and he is a confirmed techie who has made his mark in the special-effects field and in interactive media. Schklair served as vice president and general manager of new media for Digital Domain, one of Hollywood's top effects houses. While at Digital Domain and in partnership with Mattel, he developed the award-winning CD-ROM *Barbie Fashion Designer*. His diverse background also includes TV, location-based entertainment and HDTV.

In late 1999, Schklair hooked up with partners Max Penner and Tim Thomas at Paradise F/X. Penner and Thomas had founded the company in 1991 specifically to provide special camera services to the LF special-venue industry. Penner had spent more than 12 years with Ed DiGiulio and Cinema Products. (While working for DiGiulio, he helped engineer the Showscan LF camera and develop the high-speed lenses used by Stanley Kubrick to shoot the candlelit scenes in *Barry Lyndon*.) Thomas was an industry veteran with key-grip and motion-control experience. With more than 30 3-D film projects under their collective belt, Penner and Thomas

are considered experts in the field. The 3-D projects on which they have worked include *Terminator 2 3-D* for Universal, *Pirates* and *Haunts of the Olde Country* for Busch Gardens, *Muppet Vision* and *Honey, I Shrunk the Audience* for Disney, and *Nightmare on Elm Street IV* for New Line Cinema.

Out of the collaboration among Schklair, Penner and Thomas has come the ParaCam. The current 80-pound rig will weigh about 30 percent less in its next iteration. It's only 26" tall x 22" wide x 22" long. Included in the package, along with a requisite set of primes, is a pair of 10X zoom lenses. New footage recently shot and screened by the company has dispelled the myth that a zoom shot is too difficult to accomplish in 3-D. It's not only possible; the results are impressive. The ParaCam Beam Splitter configuration allows for a zoom range equivalent to the 15-perf/70mm format's range of 50-450mm. The camera sync, phase and zoom-lens functions for both cameras are manipulated simultaneously on a common time base by a master set of controls. The interocular separation between the lenses is controlled during operation from zero to 3" and can be adjusted on the fly. Convergence of the optical axis is also adjustable on the fly from 3' to

Exploring a New Dimension

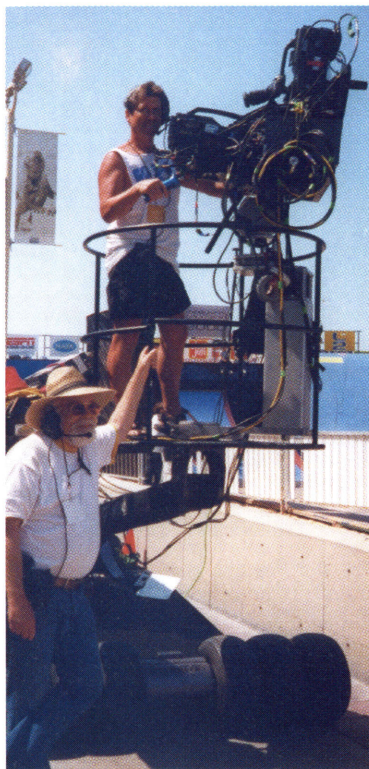
Penner (at camera) and cinematographer Peter Anderson, ASC take the ParaCam on location.

infinity. Zoom lenses, stereo and camera functions can be remotely controlled via hardwire or wireless.

For the first set of tests shown publicly, director Keith Melton directed two sequences with Penner behind the camera. The first captured the early-morning adventures of hot-air balloonists as they prepared for flight. There were no traditional 3-D gimmicks, just documentary-style shots of the activity. The second sequence involved a Fresno State/Southern Methodist University football game, most of which was filmed from the sidelines. Again, Melton used no gimmicks; he just provided a window on the world of sports. The results were edited at Laser Pacific and APS and then transferred to 15 perf/70mm film by Efilm.

Melton, whose recent 3-D directing credits include *Cirque du Soleil's Journey of Man* (see *AC* September '00) and *Ultimate G's: Zac's Flying Dream*, welcomes this new tool and predicts that its impact will be significant. "The ParaCam means that making a 3-D LF film will be more user-friendly. People entering the LF field who are used to working in TV or motion pictures won't be so frustrated. This rig means I can do longer takes or a complicated dolly shot or a long continuous shot; I can record sync sound and I don't have to schedule massive looping sessions. Because the new rigs will be significantly lighter, it won't be long before we get ParaCam on a Steadicam or to the point where we can even do handheld shots."

Melton is quick to point out that the camera system isn't yet perfect. "The resolution in wide shots is lower, though it's spectacularly good in close-ups and medium shots. This problem is not insurmountable—I know that in the near future, the resolution will be much greater and the concerns of the LF industry will be eliminated. But if I were filming a nature documentary



right now that was full of big, wide shots, I wouldn't recommend it.

"What's exciting is that I think this system will interest actors more," Melton continues. "It's less imposing, less frustrating between takes, and that improves performance. In the feature world, you have all kinds of tools to tell your stories. In the LF world, you're very limited. More tools help make more interesting stories—more conventional stories, stories that will challenge the traditional LF film. That's what excites me: the ParaCam gives LF filmmakers a fighting chance in a tough market."

Schklair knows exactly what Melton is talking about when he asks for a fighting chance. With such a small circuit of 3-D theaters in the world, how does a producer make money? LF films can make large returns on investment, but it happens slowly; there is no \$100-million opening weekend for a LF film. However, recent hits like *Imax's Everest* (see *AC* April '98) have proven that regardless of the

medium, a compelling, well-told story will attract an audience. The film was released in 1998 and has grossed \$120 million to date.

Schklair points out, "Exhibitors with LF 3-D theaters have been running 35mm prints of *Gladiator* and *The Matrix* on the big screen in the evenings. Exhibitors are desperate for new films. But fiscal responsibility in the LF market dictates that a budget for a 40-minute 3-D film should not exceed \$10 million, with a figure of \$6 million as a more accepted way to minimize risk. It's hard, if not impossible, to make a film for that budget, especially if you want to make the kinds of films that qualify as popular entertainment. All of this is changing rapidly as the market expands, but those are today's limitations."

Those limitations eventually brought Schklair to the ParaCam. "In order to enable the production of more 3-D filmed content, we had to find a way to lower the cost of production. We needed to make a platform that was much more user-friendly, more mobile and less costly to operate. Despite my background in technology, the production of this camera was stimulated more by creative and financial reasons. If we can shoot these films digitally, the cost savings alone ought to encourage more film production."

Schklair contends that a production company could save approximately 26 percent in overall costs by shooting on HD with the ParaCam rig rather than using a traditional 65mm rig. According to Schklair's own budget calculations, a three-minute roll of raw film stock costs approximately \$1,200, while a 50-minute hi-def tape costs just \$90. He further maintains that the ParaCam's lighter weight and quicker reloads could potentially shorten the production schedule by two weeks (a savings of approximately \$430,000, based on the typical cost for a LF crew and equipment),

and that the system's ease of use would eliminate the need for both a second camera assistant and a loader (at approximate salaries of \$3,000 per week) — although it would also create a slot on the set for an HD camera tech (\$3,700 per week). Further savings could be realized by the elimination of various film processing, telecine transfer and editing fees, although an additional cost of roughly \$8,500 per minute of footage would be incurred in printing the full HD master to 65mm film (i.e., converting an edited master to viewable tapes as “dailies”). He also points to reduced costs in dialogue re-recording (65mm requires more ADR due to camera noise) and negative cutting (65mm negative must be conformed, while HD needs only a few cuts). Although Schklair concedes that “if you line up six producers in a room, you’ll never get them all to agree on every single item in a budget,” he maintains that his calculations contain “no gross inaccuracies.”

Cost isn’t the only motivator. One of the biggest problems is really big. Schklair explains that a traditional 65mm 3-D camera platform “weighs between 250 and 350 pounds. The underwater rig weighs about 1,300 pounds. Both are very difficult and time-consuming to move around, whether you’re on a location or a set. That typical three-minute film load can take up to 20 minutes to reload, and even longer in the underwater housing. That’s hard on actors, but it’s hard on all types of LF filmmakers. Some of the most successful LF films have been shot underwater, but imagine the frustration — it’s hard to get fish to hit their marks! Because the ParaCam is digital, it’s possible to hook the camera up via fiber-optic cable to a computer aboard the ship, and the dive team can stay under and shoot for as long as they have the air to do so.”

Penner observes, “All this is, is



The ParaCam is taken out in the field to capture some football action.

a new tool. It makes filming in 3-D logistically easier. Our tool does have certain advantages over film, especially in the realm of 3-D photography. It’s easier to synchronize and manipulate two digital images as opposed to two film images.”

The added flexibility of the camera system proved irresistible to producer Barry Clark of Mandalay Media Arts, a company he co-founded with Peter Guber. On October 1, Clark will begin production on *Across the Empty Quarter*, a 50-minute narrative about a 13-year-old boy coming of age during a journey across the notorious Empty Quarter in the Arabian Desert. The six-week-long shoot is scheduled entirely in the United Arab Emirates. The finished film, a co-production with Mandalay Media Arts and Arabian Sands Entertainment, will be a 24p HD image printed out to 15-perf/70mm for 3-D and 2-D distribution.

Clark notes, “Our first 3-D film was *Galapagos* [see *AC* Feb. ’00], which taught us how difficult it is to work in the film-based 3-D format: 1,300 pounds of camera, \$5,000 per three-minute film load, limited lens range, et cetera. It’s like

making a film with your hands tied behind your back or running a marathon with an iron ball on your leg — not ideal circumstances. Now it’s possible to originate digitally and output to film — any film.

“We’ve actually built our film around the greater mobility of the ParaCam, and the fact that we can put it on cranes and dollies and even possibly on a Steadicam. We wouldn’t do *Across the Empty Quarter* with a conventional 3-D film camera because it would be too cumbersome and too limiting. Because we can use more conventional filmmaking techniques, we’ve designed this very much like a typical theatrical film. Plus, of course, we can shoot at a much higher ratio because of the price of the tape stock. The savings are significant, but on the other hand, because of the mobility and flexibility of the camera rig, we will raise the budget back up and increase the production values.”

Clark thinks that this is just the tip of the iceberg. He sees the future of all cinema wrapped up in the digital 3-D process. “We think the LF market has been waiting for this kind of production. In fact, we believe the future of the cinema is 3-D LF. Imagine films like *Titanic* or *Star*

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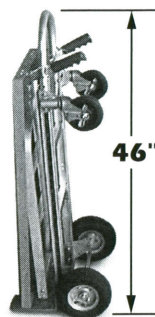


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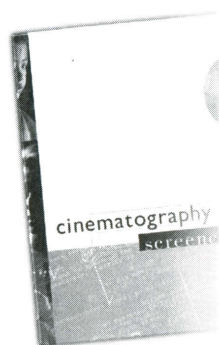


Cinematography Screencraft

by Peter Ettedgui

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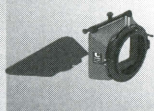
Wars or *Gladiator* in 3-D! With the cinema integrating into the home via big, flat plasma screens and high-quality sound, the out-of-home cinema experience has to become more immersive."

Additional advantages of the ParaCam rig include the ability to view footage at the time of capture. In fact, the rig comes with a video assist and 3-D headsets so that cinematographers and directors can view shots as they happen. Because the output is digital, the process of developing and printing film for projection or transfer to tape is eliminated. Converting images to computer data for the addition of visual effects is also extremely easy and much less expensive.

For production companies looking for a return on investment, there is yet another significant advantage to shooting in digital 3-D: it's a cross-platform medium. As Schklair points out, "With a single 3-D master you can create 2-D LF and 3-D LF (15-, 10-, 8- and 5-perf versions), 2-D and 3-D 35mm prints, 2-D and 3-D broadcasts for television, ATSC and NTSC versions, a DVD version and a videotape, and you can stream it on the Web. The revenue potential increases dramatically once you begin to explore the ancillary markets. Right now, Cobalt is focusing on energizing the LF arena, but over the next two to five years, as cinemas move to 3-D-compatible digital-projection systems, the potential for 3-D special events will grow dramatically. Sporting events, concerts and corporate presentations can all be presented in 3-D, and eventually 3-D will be available in the home, too.

"My advice to all filmmakers is to shoot everything in digital 3-D," he concludes. "Why not? You'll have the master you need to cover all the market potential of your piece, even if you don't use it immediately." ■

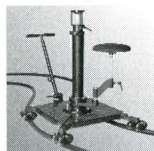
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Short Takes

A Sweet Story on Eight Legs, and an ASC Award-Winning Student Film



The computer-animated *Little Miss Spider*, based on David Kirk's popular children's book of the same name, marked a departure for artists at Kleiser-Walczak, a company best known for cutting-edge visual effects and special-venue entertainment.

An Itsy-Bitsy Spider by Stephanie Argy

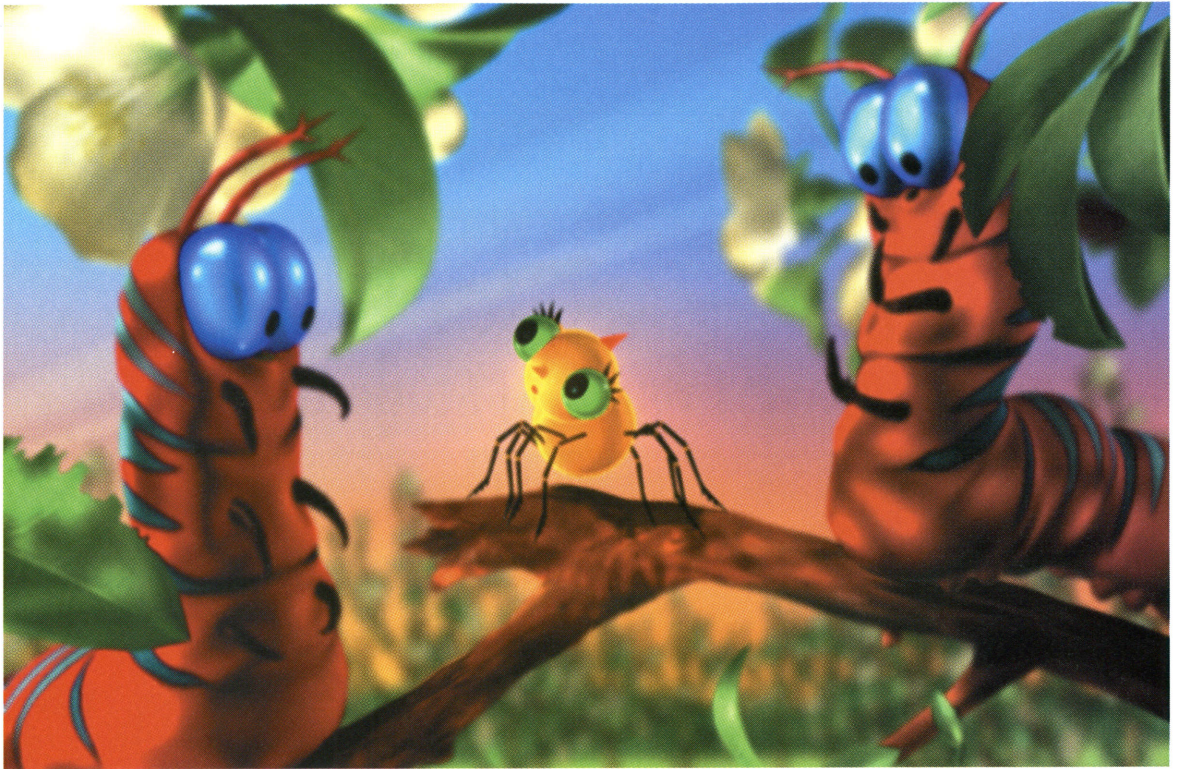
David Kirk, a children's book author and illustrator, has long had a following among digital artists. As a result, when Kirk decided to produce an animated film based on his book *Little Miss Spider*, it seemed natural to create it using 3-D computer animation. "There was a kind of affinity between David's natural style and what CGI does well," says Nick Callaway, president of Callaway Editions, which publishes Kirk's books.

In the story, a young spider searches for her mother. Along the way, she is helped by a kindly beetle named Betty, who ultimately saves her from danger and then adopts her. The challenge for Kirk was finding a studio that could understand and enter into his whimsical world, yet also handle the technical difficulties of doing the adaptation. After auditioning several different studios by having them make test scenes, Callaway and Kirk decided to work with Kleiser-Walczak, a visual-effects and animation company with offices in Hollywood, New York and

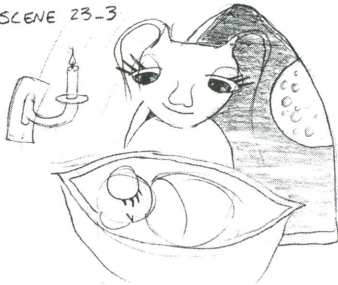
North Adams, Massachusetts. Kirk says he liked the Kleiser-Walczak team because he felt they were interested in making the movie look different from other CG projects. "We wanted to get effects of light similar to what's in the book, and to keep it sweet and light and not make it cold and garish the way a lot of computer animation is," he says.

Little Miss Spider was a bit of a departure for Kleiser-Walczak, which is perhaps better known for edgy visual effects and special-venue entertainment. Pioneers of fully computer-generated performers, dubbed "synthespians,"

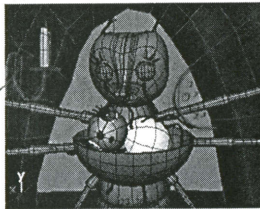
Near right:
Little Miss
Spider,
traveling in
search of her
mother,
encounters a
variety of
critters along
the way. Middle
and bottom:
These scene
drawings and
notes about
lighting
direction
eventually
yielded this
image of the
infant spider
and the kindly
beetle who
adopts her.
Opposite page:
Artists crafted
very plain
models (top) to
block out basic
actions, and
then created
characters in
3-D using
Alias|Wavefront
Maya.



SCENE 23-3



scene 23-3

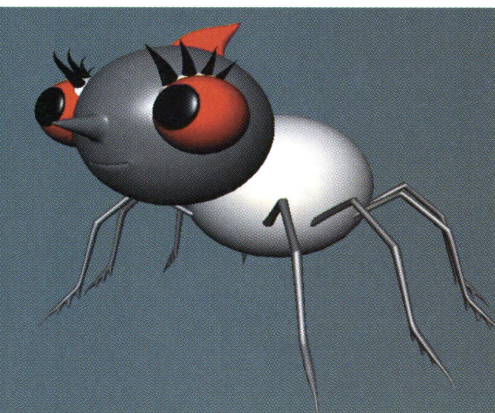


—ARCHED WINDOW REVEALS
GLOWING BLUE TWILIGHT
SKY WITH RISING FULL
MOON, COOL MOONLIGHT
FROM BEHIND & RT.
—SINGLE CANDLE FROM
UPPER LEFT.
—LMS GLOWS WARMLY
ON BETTY AND BED

Kleiser-Walczak created a digital representation of the evil blue mutant Mystique for last year's *X-Men*, and contributed to "The Amazing Adventures of Spiderman," an attraction at Universal's Islands of Adventure theme park. But for Diana Walczak, a co-founder of the company and the co-director (with Jeff Kleiser) of *Little Miss Spider*, doing the animated short was a welcome change. "I have a special love for children's books," she says. "My main motivation is to bring a storybook look to life. This book in particular is very bright and colorful and especially well-designed."

The first difficulty was the length of the animated project, which Callaway and Kirk insisted should be no more than two minutes. To see whether it could





even be done, Kleiser-Walczak scanned all of the pages in Kirk's book and cut them together with a rough sound track in an Avid. "It took three solid days in the Avid room to squeeze it down to two minutes," says Walczak.

The next step was to create a previzualization, or layout, in 3-D. Whereas most Kleiser-Walczak projects would have storyboards done first, this time around the artists were confident that they could proceed directly to the animatic, perhaps because *Little Miss Spider* was a small project with a more intimate team. The previz consisted of very plain models, with basic actions blocked out. "For awhile, it was a bit scary to look at," admits Kirk. But while the models may have been simple, they enabled the animators to figure out timing and motions; as more advanced versions of the models were generated, they could replace the primitive stand-ins.

Before the previz could be finalized, though, a voiceover track and character voices had to be recorded. The film's producer, Molly Windover, says the voices were hard to define, especially for

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This page: These images show how a perilous moment for the heroine came to life. Kleiser-Walczak artists used Adobe Photoshop and 3-D Studio Paint for texture-painting in the two-minute film. Opposite page: Animating the main character posed a variety of challenges, among them determining how an infant spider would behave physically.

Little Miss Spider, who was supposedly an infant. "In spider years, if you're 30 seconds out of your egg, how old are you really?" she wonders. Ultimately, they decided that she should sound as young as possible, and they found a 9-year-old, Marichal MacDonald, who had the right

vocal quality. "I heard her voice, and I thought, 'My God, does she sound young,'" remembers Walczak, whose daughter is a friend of MacDonald's. "Her voice was so high and so babyish." The narration was recorded by Susan Sarandon.

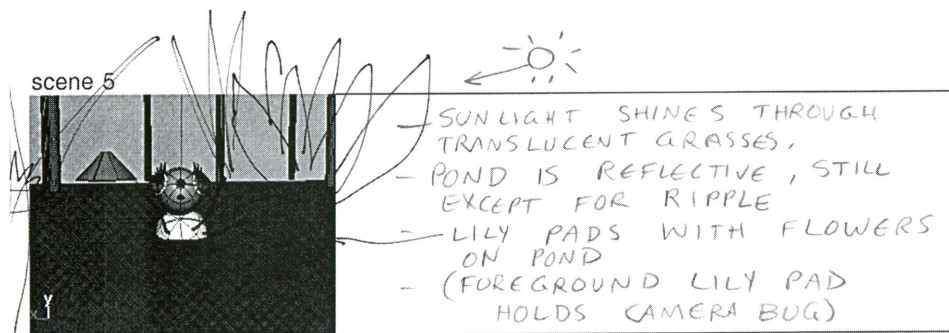
While the previz was being finished and put together with the soundtrack, other artists were building the final refined models. During this phase, Kirk visited the studio for a few days to sit with the modelers and ensure that the characters looked exactly as they did in his imagination.

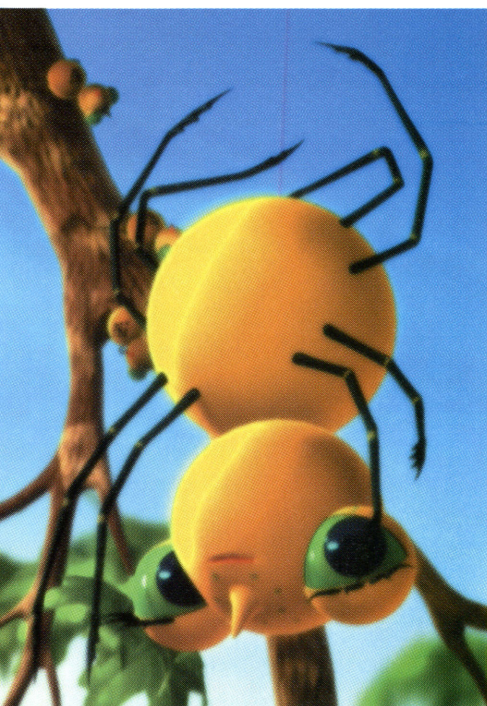
Although Kirk does illustrations for his books in oil paints on paper, Windover found him to be surprisingly computer-savvy. "He immediately was

itchy and antsy to grab the mouse," she remembers. Kleiser-Walczak uses Alias|Wavefront Maya almost exclusively for its 3-D work, and its artists did compositing and other 2-D work for *Little Miss Spider* in Composer and Adobe After Effects. In addition, a lot of texture-painting work for the environments was done in Adobe Photoshop or in 3-D Studio Paint.

In creating the models and later animating them, the artists needed Kirk to answer questions that never arose when Little Miss Spider existed only on paper. Did she walk on her back two legs, or on all eight? Did she scuttle like a real bug? Did the other insects in the story fly? What kind of motion did they have? Which elements had to look real, and which needed to look like a painting? According to Windover, a lot of energy went into figuring out such issues.

Some minor details were unexpectedly difficult. In print, Little Miss Spider has very large eyelashes — four on each eye — that are always pointed toward the viewer. Once she was transformed into a 3-D entity, though, her eyelashes had to be rigged so that they would orient themselves toward the





camera. "We had to make a lot of wacky little adjustments," says Windover.

Another challenge was filling out the world. While about 15 of the 26 shots in the movie were based on fully developed paintings that Kirk had done for the book, others were smaller images originally done on a plain white background. "We had to do a lot of recreating," says Kirk.

Because the story takes place outdoors in a natural setting, the artists had to determine what season it was, and how the world looked. "Are the trees flowering? What kind are they?" asks Walczak. She studied trees and nature in the real world. "Every day when I drove home in the spring and summer, I would closely look at the way the sun would go through the grass, and how it would light the pine trees, and how they would cast shadows."

The overall lighting scheme was very important in the short film. In the book, the sky remains blue, and the light bright, all the way through. The animated version departs from this look, with the sun slowly setting over the course of movie. By the climax, when Little Miss Spider is in danger of being eaten by a bird, the sun is fiery red. After Betty Beetle rescues Little Miss Spider and

takes her home, the lighting subsides to a cool, evening blue.

To track the lighting changes and make sure the sky evolved properly over the course of the movie, the artists created a matrix of images with a representative still from each shot in order to show the progression of the light. To get the soft look they wanted, the artists found themselves using Maya filters they hadn't taken advantage of before. They also simulated depth-of-field shifts in a few shots where the camera appears to rack focus.

The lighting on the characters also had to remain consistent. In particular, Little Miss Spider always has a warm glow around her. This was done primarily with shaders, nodes within Maya that assign colors, textures and other material qualities to 3-D objects. "You add a luminous rim on the shader itself," says Windover. "It creates the effect that there is a spotlight behind her."

Once the animation was underway, Kirk reviewed the work in progress from his home in upstate New York via an ftp connection, downloading QuickTime movies and JPEG images overnight and giving his comments the next day. "This was the first project I worked on that was almost exclusively delivered, tested and reviewed by computer," says Windover.

From start to finish, the two-minute project took about six months to complete. The size of the crew fluctuated, with 15 artists working on it simultaneously at the peak of production. Their accomplishment has been recognized by SIGGRAPH, the international computer-graphics organization, which will screen *Little Miss Spider* as part of the Electronic Theater, a showcase for innovative 3-D imagery that is part of SIGGRAPH's annual conference.

Callaway believes that the animated version of *Little Miss Spider* translates Kirk's book to the screen with an uncanny degree of fidelity, yet makes the fantasy seem completely real. "That's part of the promise of 3-D CGI," says Callaway. "It all comes alive because it feels so real."



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The NYU student film *Genesis and Catastrophe*, for which cinematographer Lukas Ettlin received an ASC Award, features a tense narrative that unfolds in a hospital ward in the 19th century. Far right: Art director Ryan Cooper touches up the set between shots.

An Ambitious Student Short

by Stephanie Argy

One of this year's recipients of the ASC Arthur Miller Heritage Award for Outstanding Cinematography, which recognizes a talented student cinematographer, was New York University student Lukas Ettlin. The young filmmaker won the award for his work on the NYU short film *Genesis and Catastrophe*.

Set in a hospital ward in the late 19th century, *Genesis and Catastrophe* focuses on a young woman who has lost three babies and is about to give birth to a fourth. From the start, the filmmakers set themselves an unusual challenge — not only is the movie a period piece, but the dialogue is entirely German, despite the fact that the project was made in America. "We knew from the beginning that for [the story] to work, it had to be way above the level of a student film," says Ettlin.

A native of Basel, Switzerland, Ettlin came to the United States to enroll in NYU's undergraduate film program. Students at the school study all different



filmmaking crafts, and Ettlin found himself shooting numerous films for other people and discovering that he had a knack for cinematography. "The more I did it, the more I liked it," he adds.

He and Jonathan Liebesman, the director of *Genesis and Catastrophe*, met early in their studies at NYU and became close friends. When Liebesman decided to make a film version of a short story by Roald Dahl, he asked Ettlin to shoot it. Because the two spent so much time together anyway, they were able to plan extensively for *Genesis and Catastrophe*. "We had hundreds of hours of discussions," says Ettlin. "For months and months before, that was all we talked about."

The two also watched many movies to settle on the tone that they wanted for theirs. The opening sequence of *Saving Private Ryan* was especially influential, as was the realistic feel common to many European films. Liebesman and Ettlin decided that they wanted the camera to seem almost like another character in the room.

To elevate the quality of the project, Ettlin set out to find something better than the standard school-issue camera. "We wanted to shoot with the best camera there is, which for us meant Panavision," he says. "It's the ultimate Hollywood camera." At the time, Ettlin had seen a Panavision only at ShowBiz Expo and had never actually used one. But when he contacted Panavision New

York and spoke about his project with Scott Fleischer, the firm's vice president of rental operations, Fleischer agreed to loan him a Panaflex Gold.

The movie was shot on a soundstage at NYU, with sets designed by NYU grad student Ryan Cooper. The advantage of shooting on set was that Liebesman and Ettlin knew exactly where the action would happen and could plan accordingly. The disadvantage was that they had to use the lights on the stage. The biggest available were 5K tungstens — and there were only about four of those. Though Ettlin pleaded for Xenons so he could create beams of light cutting through smoke into the hospital ward, the production couldn't afford them, and he had to make do with what he had. In retrospect, though, he says the lack of Xenons helped him; if had he used them, he speculates, *Genesis and Catastrophe* might have looked too much like a music video.

Instead, Ettlin maintained a feeling of realism in his lighting. "We wanted to light the set, rather than individual shots," he says. This was primarily an aesthetic decision, but it was also influenced by time constraints — with a shoot of only six days, he knew he wouldn't have time to relight every setup.

Throughout the film, Ettlin used opal diffusion on the windows so he could blow them out and disguise the



Top: Ettlin and first AC Anna Yusim take a focus measurement. Left: A nurse tries to calm the frantic woman as she prepares to give birth.

fact that the production was shooting on a stage. He also tried to keep a few soft-focus highlights in the background, so that the frame would have a good range in terms of brightness. "The highlights gave a little accent to the frame," he said. "I didn't want the film to look unintentionally dark."

A lot of thought also went into the picture's color palette. To play up the gore surrounding the birth, everything else in the film was rendered in brown, black or white. "That way, when there was blood, it would really pop out," says Ettlin. He believes that this attention to color design is one reason that *Genesis and Catastrophe* looks more professional than the average student film.

Casting the film turned out to be a challenge, because Liebesman, who comes from South Africa, spoke no German. The casting call specified that the performers had to be fluent in German, but people from many European countries came to audition, all claiming to be Germans. Ettlin, the only German-speaking person on the crew, sat in on the auditions to give a linguistic thumbs-

up or down.

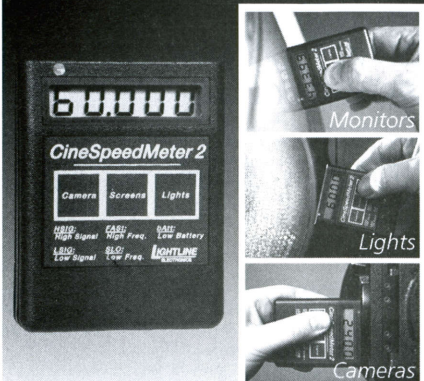
One key non-speaking player in the film was the newborn infant. In many shots the baby was actually a doll, but for close-ups, producer Andrew Fleisher was able to find a three-week old baby who could work for two hours. "That was really good producing on his part," jokes Ettlin.

While the crew did shoot a few dolly shots, none of them ended up in the movie. In particular, a very elaborate opening shot was left out. Ettlin says that while it was a good shot on its own, it ultimately didn't serve the purposes of the film. Instead, the filmmakers found that it was more effective to start with a close-up of the pregnant woman and bring the audience straight into the most intense sequence of the movie.

Ettlin and Liebesman divided the short film into three acts, each with a different energy and look. The first act is frantic and desperate, as the terrified young woman gives birth. To enhance the panic and chaos, Ettlin shot this section so that the contrast would be as stark as possible. Using the few 5Ks he

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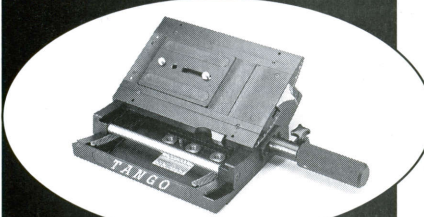
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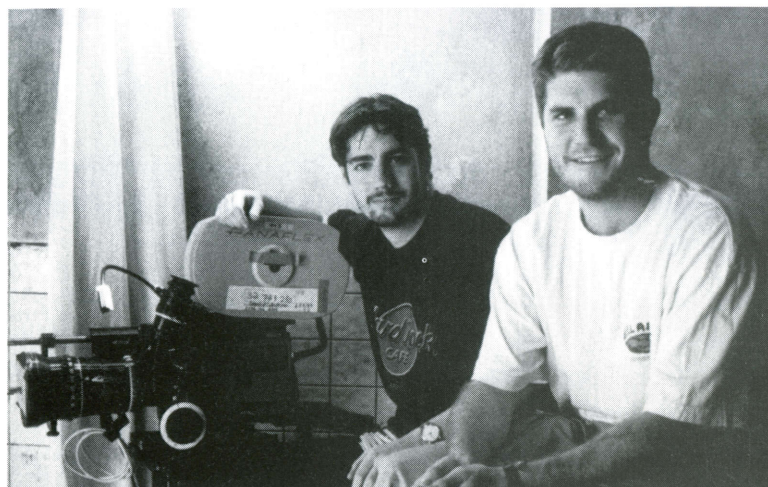
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NYU classmates Ettlín (left) and director Jonathan Liebesman were friends long before they made the film, and talked about the project a great deal. The cinematographer says the lengthy, unofficial prep was key to the film's success.

had, he blasted one through each window on the set, spotted all the way, using no fill at all.

Although Ettlín shot most of the movie on Kodak EXR 5293 stock, he also used Kodak Vision 200T 5274, pushed one stop, for first-act POV shots in which the young mother watches another woman die in childbirth. Most of the POVs were shot using an 85mm lens, and all were handheld, with a 45-degree shutter angle. Throughout the movie, Ettlín used a 1/8 Tiffen Black ProMist on the lens.

One reason that Ettlín sought to use a camera more sophisticated than those available from NYU was his desire to execute a shot that included a modest speed ramp. At the moment that the young mother actually gives birth, she turns into a highlight, and the camera ramps into slow motion, then back out. To handle the advanced camera operations, Ettlín brought in a professional first camera assistant, Anna Yusim.

About 70 percent of the first act was shot with an 85mm lens, but the perspective begins to widen out in the second act. This sequence is a bit calmer, as the doctor reassures the young mother, who is convinced that this baby too has died. Ettlín softened the light by building a chicken coop of diffusion with an array of smaller lights inside. He also bounced his most powerful lights into a wall to achieve a soft, reflected light.

In the third act of *Genesis and Catastrophe*, the mother finally holds the infant, and the father comes into the ward. When he looks at the baby, he dismisses it as even smaller and weaker than the previous babies who had died. The doctor rebukes him for his attitude, but then the movie takes a twist — one that causes the audience to reevaluate everything they've seen.

Because the film takes place over one long day, Ettlín wanted this last section to look like dusk, but a dramatically heightened dusk. To give the images a rich look, he gelled the lights with light amber.

The final sequence also includes the film's only extremely wide shot, which was done with a 14.5mm lens. The shot follows the movie's big twist and contributes to the moment because it is so different from the other shots in the movie. "It has the same impact a close-up would have, but in the opposite direction," says Ettlín.

Genesis and Catastrophe won awards at the Austin and Hollywood film festivals, and Ettlín received not only the ASC Student Award, but also NYU's cinematography award. The movie has since played at the American Pavilion in Cannes, and it can now be seen on iFilm (www.ifilm.com).

New Products & Services

compiled by Douglas Bankston



Into the Third Dimension: Canon Brings 3-D to Video by Ray Zone

Canon's XL-1 digital-video (DV) camcorder has proven itself in the field as a useful professional camera for many applications. Delivering more than 500 lines of horizontal resolution with three interline transfer CCDs that are each $\frac{1}{3}$ " with 270,000 pixels, the XL-1 is equipped with a DV terminal that conforms to IEEE 1394 firewire connection for digital transfer of video and sound, as well as regular video and audio outputs.

Canon recently introduced a stereoscopic triple zoom lens for the XL-1. With a focal length of 7.5-22.5mm and an aperture range of f1.8-4.5, the 3-D unit has two separate left and right eye lenses 65mm apart, which use a second common lens group for zooming and focusing. Sequential video fields display the left and right eye views alternately 60 times per second, and the video signal is output by one signal line. Television and computer monitors with alternating field displays, combined with liquid-crystal shutter glasses or head-mounted displays (HMDs), are used for 3-D viewing of the stereoscopic images. Sequential field capture of the left- and right-eye images is compatible with 60 hertz, 90 hertz and 120 hertz display systems.

With a unique mirror system, the optical axes of the two lenses can be "toed-in," or converged in much the same way that the human eyes converge on a closely observed subject, with an adjustable dial on top of the 3-D unit. The 3-D lens uses both auto focus and manual modes, and there is an automatic convergence-adjustment switch that sets the convergence around the subject at the time the switch is pressed. There is no "homing" function with this switch



Above: The Canon Stereoscopic Triple Zoom Lens for the XL-1 Camera.
Left: The 3-D lens mounted on the Canon XL-1 Camera.

Below: Working about as close as you can get with the 3-D lens and XL-1, director Jason Goodman aims over the shoulder of actress Margaux St. Ledger as gaffer Chris Walters steadies the ladder.



Upper left: Even video field view of actor Ben Dooley from the Canon stereoscopic lens.

Lower left: Odd video field view of actor Ben Dooley from the Canon stereoscopic lens.

Far right: Multiplexed view combining left and right eye fields from the Canon stereoscopic lens.

Opposite page: Cinematographer Jason Goodman aligns a straight up through-the-glass shot while wearing the HMD for real time 3-D viewing.



and, once adjusted, the convergence remains at this setting until it is reset. The camera operator is free, however, to change convergence manually while the XL-1 is running. The closest focusing distance of the 3-D lens is 3.3'.

The stereoscopic lens, like the XL-1, is made of a light and durable magnesium alloy and weighs 35.3 ounces, is 5 1/2" long, includes a hood, and has a filter diameter of 52mm and an effective image size of 4.8 x 3.6mm. Because the left and right eye lenses share a second common lens group, only one filter can be used at a time with the 3-D lens. It does not have a built-in neutral-density (ND) filter, and owing to its structure, polarizing filters cannot be used. An ND filter can be mounted to the filter screw on the front of the lens.

Canon developed the 3-D lens to support emerging markets for stereoscopic imagery in entertainment, marketing, education, medicine, architecture, product design and fashion. Though the lens won't be on the market until October, several prototypes have been in use. Jason Goodman, a cinematographer and director with Multimedia Software Design in New York, used the 3-D lens with the Canon XL-1 to produce two stereoscopic trade-show presentations for a client. "We've done two corporate videos in 3-D for a company called Broan-NuTone, which manufactures various items for the home," says Goodman. "They wanted to create a 3-D video to be played at a virtual-reality theater at the International Builder's Show in Atlanta

last February. The first video we did was called 'Enter a Nu Dimension' and shows a young couple going into a home; it covers all the benefits of Broan-NuTone products."

The virtual-reality theater at the trade show consisted of 16 seats equipped with a rumble sound system. The audience wore HMDs from IO Display Systems for viewing the 3-D video. The HMDs feature a personal stereo sound system and are wired to a single playback unit running the 3-D video. IO Display markets a number of HMDs ranging in price from \$499 to \$699, and a typical pair weighs about 8 ounces, uses S-video or RCA video input, and doesn't have the flicker normally associated with alternating field playback.

"Resolution of the display was about 320 by 240 pixels," says Goodman, "and it's a pretty immersive experience and gives a very satisfying 3-D image. We are the first company in the U.S. to do an actual shoot with the 3-D lens, and we had specified that the IO Display HMD be used." In addition, Goodman used the HMD while videotaping for 3-D playback and real-time 3-D viewing of setups and camera rehearsals during the shoot.

"We had a Eurojib and were subtly moving the camera," he details. "We tried to get a continuous perspective change and kept things moving in relation to one another within the shot. That was very effective."

Lighting for 3-D, as Goodman

learned, is somewhat different. A deep depth of field is required in order to best capitalize on 3-D technology. "We needed a lot of light. I told the gaffer to figure the light for a standard video shoot and then double it. We were shooting in a house in Wisconsin during the winter, and I had the gaffer go in the house and light up the back room. He looked at me like I was crazy, but I wanted a lot of depth of field in the house. When the door opens in the shot, you see into the depths of the house. It worked well. We did a lot of lighting for things you might not normally light on a video shoot so that we could have detail in multiple planes of the image."

The second 3-D video, "Fresh Ideas Inspired by Dreams," loosely inspired by *Alice in Wonderland*, was about kitchens and was shot on a set. In a dream, a woman is transported to her ideal fantasy kitchen. "There is a hidden range in one of these wonderful kitchens," says Goodman. "We got as close as we could, but we had to match up a 3-D model of the range hood with the real range hood in the kitchen. We moved seamlessly from a live-action 3-D shot into a CG 3-D shot of the kitchen, and then up into the range hood."

Goodman says he generally used the convergence-adjustment feature on the 3-D lens conservatively. "The best thing to do is to make the shot as comfortable for the viewer to see as possible. I relied on a lot of other monocular depth cues to get the 3-D to really work, and generally I was converging on



the subject with the subject pretty close."

Canon loaned *American Cinematographer* an XL-1 with the 3-D lens for a few days to run some tests. Playback of footage shot and real-time 3-D viewing were done with an IO Display HMD. To evaluate the 3-D lens, we called on some ASC members knowledgeable about stereoscopic systems. "It's a marvelous piece of equipment," says Peter Anderson, ASC, an acknowledged expert in 3-D cinematography whose credits include the stereoscopic films *T2 3-D* (1997), *Pirates in 4-D* (1999) and *Cirque du Soleil Journey of Man* (2000). "Canon put a lot of good thought and a lot of good energy into it. The optics are quite good, and it seems to have a lot of advantages over some of the earlier, single-system 3-D video rigs.

"It needs a distance scale on the convergence setting and lacks interocular control for large screen use," Anderson continues. "[But] it's very well designed. The auto focus and the convergence setting are independent of each other. The auto focus uses contrast within the zone of interest within the camera, and the infrared convergence setter reads out whatever is closest to it within that point, which isn't necessarily the same subject. But having convergence at the point of focus isn't necessarily an ideal thing if you're trying to give visual continuity across cuts. I'm actually seeing the XL-1 camera all the time now on behind-the-scenes shoots."

John Hora, ASC, worked with

Anderson on *Journey of Man*. "I like the way they've packaged the camera and lens," says Hora. "As long as the screen is small, you can get away with convergence, but not if you're talking about a big display. The lens is priced high, but for video this is the nicest package I've ever seen."

Priced at \$8,499, the 3-D lens is definitely for the "prosumer" market. Steve Hines of HinesLab in Glendale, California, also took a look at the XL-1 camera and 3-D lens. Hines designed the first modern dual-camera arrangements that allow for independent adjustment of the lens interaxial and convergence during the shot. Other innovations of Hines's include a 3-D video viewfinder and a wireless remote for stereoscopic filming. "I'm glad to see Canon produce this lens," says Hines. "The main [challenge] is going to be finding the market. I'm also really glad to see that the system can be viewed at 120 hz so that each eye can see 60 fields. But whether the display uses a line doubler or a temporal doubler, content is going to be what's really important."

This writer took the XL-1 and the 3-D lens out for a trial run and found the camera easy to transport and use. The camera with lens weighs about 6.5 pounds. The convergence adjustment allows cameramen to optimize the 3-D effect, despite the fact that the camera has a fixed interaxial distance between the two lenses. As a result, the strongest 3-D effects will be created shooting subject matter within a distance of 20'.

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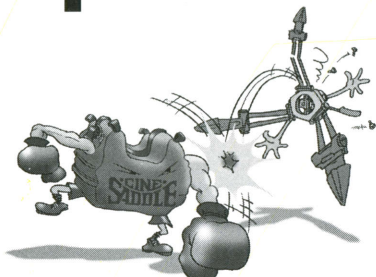
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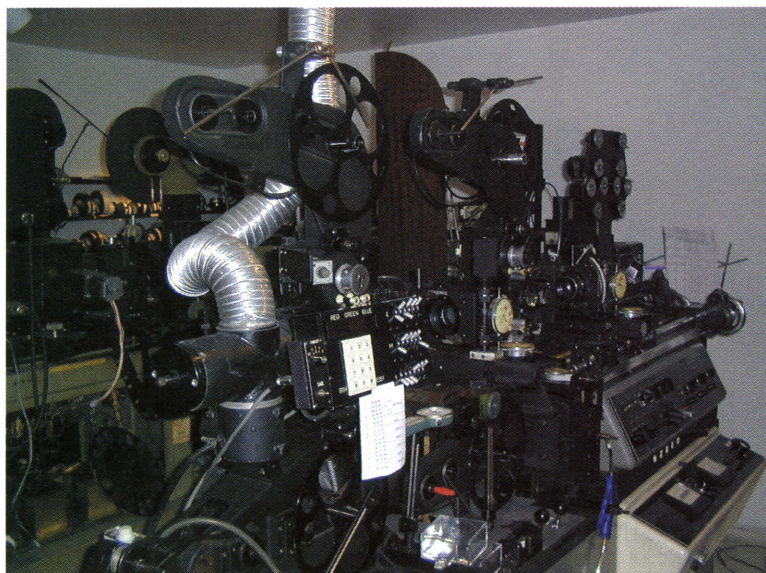
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Technicians at Canon have created an upgraded XL-1, the XL-1S, that provides selectable NTSC, PAL or progressive-capture modes. Yukiaki Hashimoto, vice president of the Photographic Products Group for Canon, USA, believes that despite the stereoscopic activity of prior eras, "the most significant advancement in 3-D technology is happening now."

the organic colors, extended contrast and flowing motion expected from film. The facility is equipped to transfer NTSC and PAL DV formats (miniDV, DVCam, Beta SP, DigiBeta, hi-def) to film (35mm, Super 16mm, 16mm).

The Heavy Light staff works closely with clients to give them the creative access and guidance they need to make the best film possible. Kate Davis, a recent client and Grand Jury Prize winner at this year's Sundance Film Festival for her documentary *Southern Comfort*, says, "In blowing my DV feature up to 35mm, I felt very lucky to be



Video to Film

Heavy Light Digital, a Manhattan-based digital postproduction house specializing in composite cinematography and digital effects, has designed The Cinematrix II, a unique DV-to-film recording system.

Keeping pace with the latest evolution of film production, Heavy Light Digital has been a pioneer in the development of sophisticated post techniques that provide the best results when transferring DV formats to film.

The Cinematrix II was engineered to handle the complex nature of DV-to-film transfers. The state-of-the-art system integrates superior optics, imaging electronics, and software algorithms, which results in a product that possesses

working with Tom Edmon and the crew at Heavy Light. They really threw themselves into the job, working at getting the motion shots as smooth as possible and tweaking the color balance."

Heavy Light Digital was established in 1996 by film-industry veterans Tom Edmon and Robert Luttrell, who together bring more than 50 years of commercial production and postproduction experience to their cinematographic enterprise.

For more information, call (212) 645-8216 or visit www.heavylightdigital.com.

Visual-Effects Upgrade

Visual-effects compositing software company Boris has introduced Boris FX 6.0, a major upgrade to the

company's award-winning visual-effects and image-processing application. New features in Boris FX 6.0 include: natural-effects filters such as Fire, Rain, Snow and Stars; advanced particle effects such as Stars and 3-D Image Shatter; lighting filters; compositing tools such as apply modes, displacement maps and motion blur; audio support; and support for third-party video plug-ins.

"Boris FX has long been the industry leader for integrated effects in non-linear editing, and FX 6.0 goes much further to add advanced compositing options into the editing environment," says Boris Yamnitsky, company founder and president. "We offer such unique features as the ability to animate and mix apply modes for exceptional flexibility. The addition of natural effects, lighting filters, and new particle effects to the already powerful combination of color correction, keying, blurs, and transition effects make Boris FX 6.0 a more robust effects solution than ever."

Feature highlights in Boris FX 6.0 include natural filters such as Clouds, Fire, Rain, Snow, Comets, Sparks, and Stars. All are auto-animated filters, allowing users to quickly create effects. These filters offer a wide variety of interaction and compositing options using alpha channels.

Lighting Filters provide simulated extrusions, bump maps, and gel and matte effects with user-defined shapes.

Compositing Tools include 27 apply modes for each layer in Boris FX, motion blur, displacement maps, advanced particle and lighting filters, and Smart View to dynamically update views of animated parameters in the timeline.

Audio Import and Playback Scratch audio track includes timeline waveform display and level controls to enable easier reference and synchronization to audio during effect animation design. Real-time playback of scrub audio, and sync audio during Preview to RAM.

Third Party Plug-ins from many leading packages developed for Adobe After Effects may now be used with all NLE systems supported by Boris FX 6.0. They appear in the Boris FX Filters menu

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Unparalleled Integration, while not a new feature, remains a crucial advantage in Boris FX 6.0: it is the only effects solution that allows this range of features directly inside non-linear editing applications. Open GL and Dual Processor Support on both Windows and Macintosh computers means faster effects creation and faster rendering. Boris FX 6.0 also features Altivec enhancement on Macintosh G4 computers.

For more information, contact Boris at (888) 772-6747 or (617) 451-9900, or visit the Boris Web site at www.borisfx.com.

Threat Unleashed

Threat, a new digital studio providing editing, visual effects, animation and compositing services, has launched in Santa Monica in a \$5.5-million facility. The company's goal is to provide end-to-end post services for commercials, entertainment television, feature films, music videos and new media.

"Threat was conceived to attract the very best projects and to work at the highest level of the industry," says company founder and managing director Griffin Guess. "We've built a great facility, we have gathered a fantastic team of artists, and we intend to succeed by working harder, being more determined and doing things a little differently than other post houses."

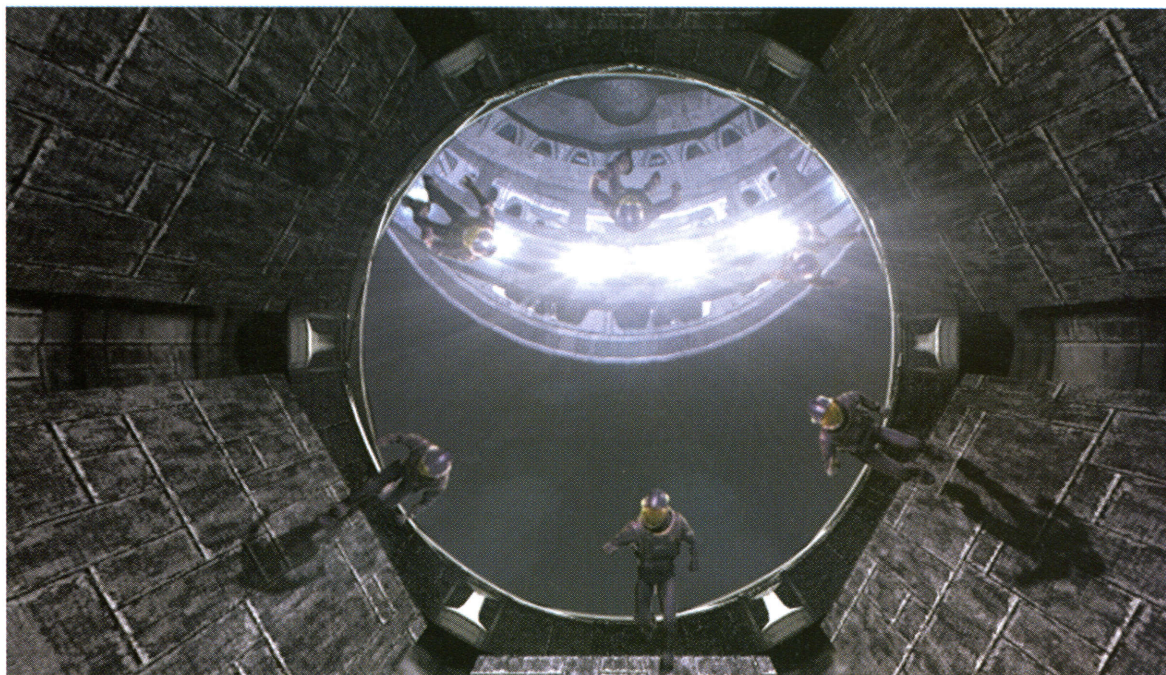
That difference can be found in the company's "part techno wonderland, part tropical art museum" facility. Features include Discreet Flame and Inferno suites, Avid offline and online editing systems, and Media 100 editing platforms. The animation department features SGI Octane 2 workstations running Alias|Wavefront Maya 3-D animation software, five sets of Lightwave and Combustion, and a variety of tools for visual effects and rendering.

Threat is located at 725 Arizona Avenue, #206, Santa Monica, California, 90401, (310) 393-9800. ■

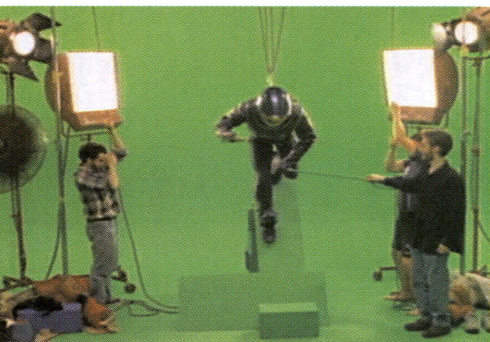
Points East

Dazzling Effects on a Student's Budget

by Eric Rudolph



To create the illusion of multiple spacemen in the student film *Rendezvous with Rama*, director Aaron Ross and cinematographer Josh Nussbaum first shot a lone actor in front of a large cyclorama painted green. Ross then used Adobe After Effects to multiply the spaceman and insert the figures into digital backgrounds.



According to recent New York University film-school graduate Aaron Ross, "The whole point of going to film school is to have ... years with nothing to do except build your reel. You have to study movies all the time to be a good filmmaker, but in the practical sense, the reel is the thing that will get you a decent job."

Ross speaks from experience. He recently moved to Hong Kong to begin a

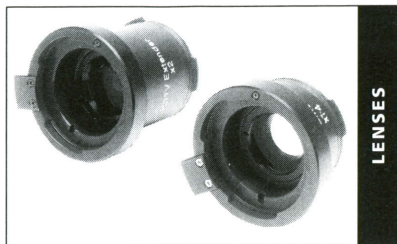
job as an assistant visual-effects supervisor with AsiaCine Digital on the film *The Touch*, directed by Academy Award-winning cinematographer Peter Pau, HKSC (*Crouching Tiger, Hidden Dragon*). Ross got the job largely on the merits of his three-minute student film *Rendezvous with Rama*.

To create the short, Ross and his classmate, cinematographer Josh Nussbaum, shot an actor wearing a space suit in front of a large cyclorama they had painted green. The actor was suspended from a rock-climbing rope rig to simulate floating in outer space. Using Adobe After Effects software, Ross digitally multiplied the lone spaceman. He then composited the multiple spacemen (using After Effects) with digital backgrounds he had created with Alias/Wavefront's Maya 3-D animation software.

What possessed an undergraduate who had no experience merging live action and computer-generated imagery (CGI) to attempt such an ambitious project? "I took a 3-D animation class, and an all-CGI trailer [for a nonexistent feature adaptation of *Rendezvous with Rama*, based on Arthur C. Clarke's novel] was my final class project. When I heard *Rama* had been picked up as a potential feature, I decided to redo the whole thing with live actors and CGI sets."

Ross says his short film is akin to *2001: A Space Odyssey* in style. It "summarizes the opening of the book, during which astronauts board a mysterious, 50-kilometer-long cylinder that has entered Earth's atmosphere." He initially fretted that he "had never attempted an effects project of this scale before, and I wasn't sure I could pull it

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off. But I just threw myself into it, assembled the best crew possible, and trusted that I would make it through. And I did."

Careful planning helped. During prep, Ross made precise storyboards and created the 3-D sets, complete with stand-in CGI actors, using Maya. "I didn't have to determine my camera angles on set [because] I'd already wandered around my 3-D set playing with the focal lengths of my virtual camera until I found the perfect compositions," he notes. "I also didn't have to do any explaining on set because we knew exactly how the scene was supposed to look. The storyboards and the live-action composites ended up being almost identical."

The biggest challenge was conceiving and then executing the method for getting "the actor to look like he was floating and maneuvering in zero gravity," Ross explains. "Ultimately, we decided to use a wire-suspension rig [and a bit of overcranking] to create slow motion, in order to smooth out the jerks. Some of us had rock-climbing experience, so we rigged a two-man pulley system with climbing rope and a harness."

The production rented a space suit used in *Red Planet* from Warner Bros. The non-breathable, minimally ventilated rubber suit was not meant to be worn for more than 15 minutes at a time, "especially during rigorous exercise while suspended in a harness, as we had actor Jens Rasmussen doing. However, he stayed in that suit all day long. He couldn't keep the helmet on for long, though, because he would have suffocated."

Because there was only one suit, Rasmussen had to stand in for most of the eight spacemen. Ross details, "We did multiple takes, timing the interactions [between the spacemen] to sell the illusion [of multiple spacemen]. Jens had a personality and a walk for each character!"

Cinematographer Nussbaum used short ends of Kodak Vision 200T 5274, which was actually a faster stock than he would have preferred. He wanted a T4 stop, and the production

couldn't afford the lights he would have needed to achieve that with a slower stock. The camera package came with an old 20-200mm T3.1 Taylor Hobson Cooke zoom and T2 Zeiss primes, including 10mm, 14mm, 24mm and 50mm focal lengths. Nussbaum found he needed the full range of lenses because "we had to force perspective in order to create a sense of depth that our soundstage didn't actually have. The tight studio layout made it impossible to set the action more than 15 feet from the green cyclorama." The cinematographer found that green spill was a constant problem. "We were constantly setting flags because the cyc wrapped 180 degrees around," he notes.

Nussbaum lit the cyclorama to T4 with tungsten sources hung from the studio's grid. The action was lit with 5K and 10K Fresnels. The lighting was motivated by spill from the airlock of the mysterious space vehicle, which existed only in CGI. The biggest technical challenge, Nussbaum says, was lighting the faceplate of the space helmet, which was "180 degrees around and bright yellow. It not only reflected our lights, but it also blocked about two stops of light from the actor's face. We ended up lighting the face with a flagged 5K through 216 diffusion to produce a single, easy-to-remove reflection [that was eliminated in post]."

The ambitious project seemed too big for the standard student 16mm film. Fortunately, the filmmakers were able to secure an Arriflex BL-3 35mm camera that New York's Camera Service Center had loaned NYU. With short-end loads for stock, the project cost Ross less than \$5,000, not counting grants from the university. He did all of the digital work on his home computer, a 1GHz Dell P3 with 384MB RAM, a 32MB video card and a 20-gigabyte hard drive.

Ross will post the film on a Web site as a fan-made trailer for the expected Hollywood film. ■

Books in Review

by Ray Zone

***Placing Shadows:
Lighting Techniques for
Video Production
(Second Edition)***

by Chuck B. Gloman and
Tom LeTourneau
Focal Press, 206 pp., \$34.95
ISBN # 0-240-80409-0

In creating an illusion for a camera record, light is the primary element; at its essence, the cinematographic craft involves "placing shadows" using an array of lights and lighting techniques. "Where you 'place' the shadow makes a big difference," note the authors of this highly pragmatic volume, which provides indispensable advice for the budding cinematographer by mixing the theoretical and the practical.

The first chapter provides a theoretical grounding in the physics of light and the video camera. Fundamentals of color, color temperature and color-rendering index (CRI) are clearly explained, along with the properties of mixed color temperature, filters and common light sources. Diagrams clearly illustrate essential concepts such as radiating point light source, a typical lamp's effects on light rays, and lighting-intensity falloff. "If you have understood all of the information in this chapter," say the authors, "the remainder of the text will be as easy as burning your fingers on a barn door."

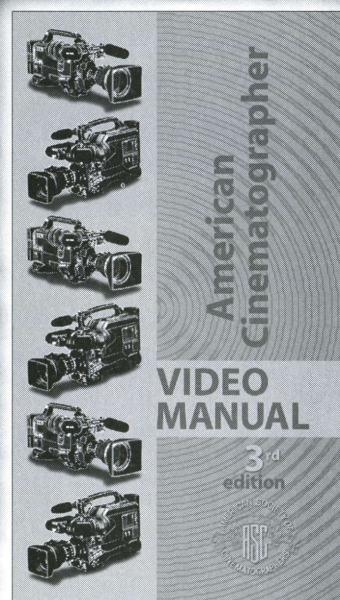
The subsequent chapters blaze through available lighting resources; uses for meters, monitors, lamps and reflectors; and an array of techniques for both studio and location videotaping. Throughout the book, photos of lighting setups and equipment, as well as diagrams, illustrate the contemporary tools and techniques available to the videographer.

The authors stress that lighting techniques for film and video projects are essentially the same. But they point out that there are three tools unavailable to filmmakers that assist videographers in achieving proper exposure and color balance: the color picture monitor, the waveform monitor and the vectorscope. Paradoxically, these tools have also been responsible for the failure of some videographers to really learn their craft, according to the authors. Using an essential understanding of concepts such as depth of field, exposure, film speed and focal lengths, "film people have been in the business of exposing life to a recording medium for a great deal longer than video people," say the authors, "and they have learned their craft well."

Lighting contrast ratios between film and video are significantly different. The maximum allowable difference between the brightest area of the picture and the darkest area with film is 100:1, and with analog video is 20:1. Digital video (DV) and the use of CCD chips and improved circuits have improved this ratio to 30:1, and, with high-definition television (HDTV) to 50:1. The authors recommend working within a range of five f-stops to avoid image degradation.

The bulk of this book, however, deals with lighting tools common to both filmmakers and videographers. An eight-page color section illustrates the differences between daylight balance with tungsten light and tungsten balance with daylight, along with diffusion light, chroma key blue and various lighting setups. An excellent glossary of terms and tips and an appendix of resources for the lighting professional round out this highly useful volume.

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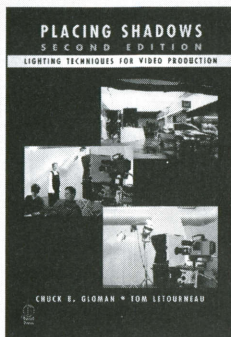
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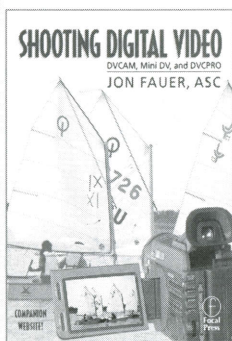
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American Cinematographer Video Manual (Third Edition)

Edited by Michael Grotticelli
The ASC Press, 458 pp., \$34.95
ISBN # 0-935578-14-5

In his introduction to this manual, editor Michael Grotticelli refers to it as the "ASC Digital Video Manual." That's about right. In the seven years that have elapsed since the second edition appeared, a video revolution has taken place. "The advent of digital technology has forever changed the way in which video production is approached and completed," says Grotticelli. "If you aren't shooting with a digital camera and are not archiving on digital tape, you're missing out on the immense possibilities and limiting the future viability of your work."

Accordingly, Grotticelli has assembled a stellar array of writers conversant with DV formats and standards to produce an indispensable primer on where the technology stands today. The opening essay, "The End of NTSC: We Were Shafted," is a brilliant historical overview of TV technology by Mark Schubert, an engineer, historian and judge. From the pioneering TV inventions of John Logie Baird in the 1920s to the final report of the National Television Standards Committee (NTSC) issued on January 27, 1941 (which adopted the 525-line system still used today), Schubert underscores the importance of standards in the evolution of new TV technologies. He also notes that because of complexities inherent in the implementation of HDTV and digital television as they stand on the brink of widespread public use, NTSC TV may be with us for years to come.

The second chapter, "Going Digital" by Joseph Fedele, is a clearly written primer on the basic principles of both analog and digital video. "It is important to understand," writes Fedele, "that regardless of how a 'real' moving image is stored or transmitted, its original picture information was captured in analog form and later converted to digital." The final viewing

of moving pictures takes place on "monitors that present those signals in analog form for our eyes" so that "the primary reason to convert video from analog to digital in the first place is to allow for quality improvements in transmission or storage."

The complex series of events by which analog information is converted to digital is clearly explained by Fedele, who covers sampling, data rates and compression standards such as JPEG and MPEG. Well-drawn graphics and charts by Marion Gore and Martha Winterhalter illustrate Fedele's coverage of the fundamentals of digital conversion.

Digital videotape, as John Rice points out in his chapter on various formats, "once the domain of the high-end, high-budget production, has now become the mainstream, with over 15 formats or versions of formats currently available." Standard-definition and hi-def formats now in use are listed, along with their relative strengths and limitations.

In "Video Cameras & Lenses in the Digital Era," Robert M. Goodman outlines "a new set of tools available for exploitation by talented directors of photography." To aid cinematographers making the transition from the photochemical world of film to the digital electronic realm, Goodman points out the relationship between film and video terminology. In an initial section on "Digital Camera Basics," Goodman discusses the four principal types of digital cameras, the imaging process, charge-coupled devices (CCDs) and digital signal processing (DSP). Also discussed are DV cameras that are currently on the market.

Test equipment for DV is explained by Gerald McGinty, and digital audio for video is clarified by Lon Neumann. As with previous editions of the ASC Video Manual, additional articles address specifics of video production, from storage of videotape to exposure indexes for video cameras. A comprehensive "Digital Glossary" is a new feature of this book, which is an essential field guide for any pioneer blazing trails on the DV frontier. ■

ARTHUR MILLER, ASC

by Ray Zone & Chuck Roblin

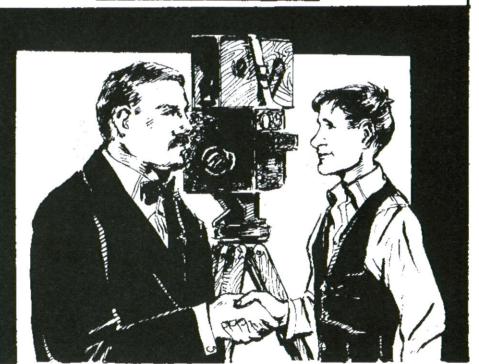


ARTHUR C. MILLER, ASC
1895-1970

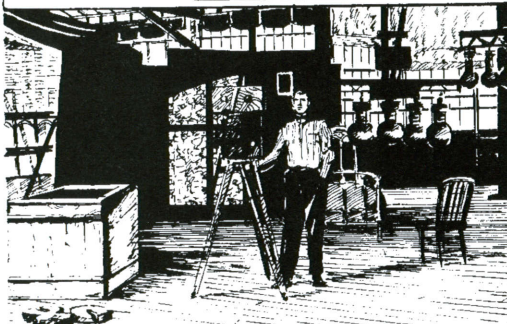
ARTHUR MILLER WAS 14 YEARS OLD IN 1908 WHEN HE WENT TO WORK FOR FRED BALSCHOFER IN THE LAB OF THE CRESCENT FILM COMPANY.



IN 1910 MILLER WENT TO WORK FOR EDWIN S. PORTER.



BY 1912, MILLER WAS A CAMERAMAN FOR THE PATHÉ FRÈRES FILMING NEWSREELS AND IN 1914 THE PIONEERING SERIAL "PERILS OF PAULINE".



IN 1915 MILLER BEGAN TO WORK WITH DIRECTOR GEORGE FITZMAURICE AND MAKING "TRICK" SHOTS IN CAMERA WITH LAP DISSOLVES, FADES AND DOUBLE EXPOSURES.

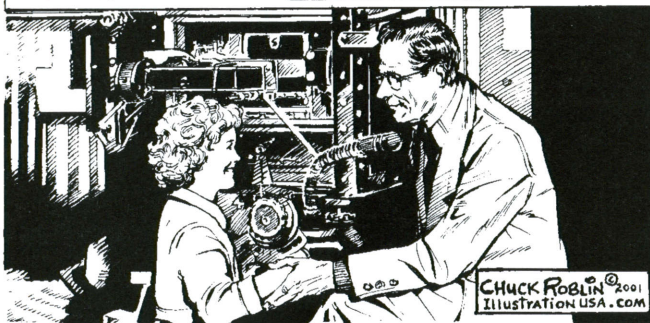


IN CAMERA
DOUBLE EXPOSURE

MILLER CAME TO HOLLYWOOD IN 1918 AND CONTINUED WORKING WITH FITZMAURICE ON THE UNIVERSAL LOT.



AFTER WORKING FOR VARIOUS STUDIOS, MILLER CAME TO 20TH CENTURY FOX IN 1932. HE FILMED SHIRLEY TEMPLE IN SEVERAL MOVIES BEGINNING WITH "BRIGHT EYES" IN 1934.



CHUCK ROBLIN © 2001
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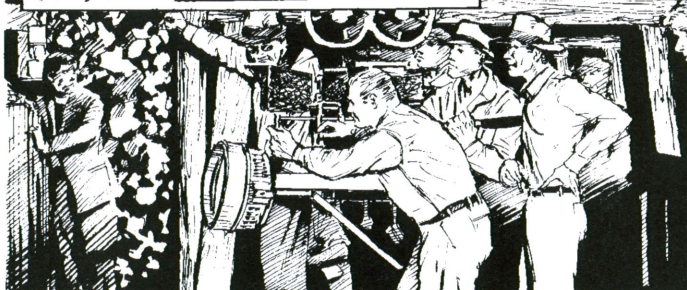
FOR 18 YEARS MILLER REMAINED WITH FOX.



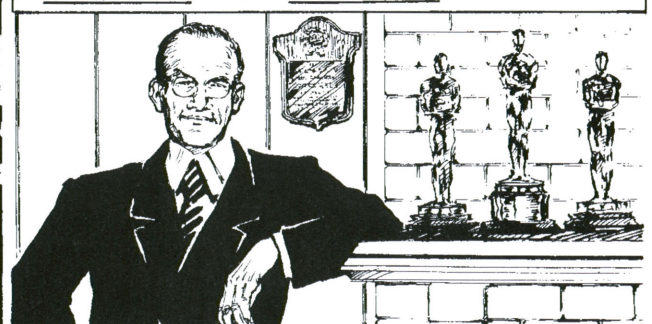
FILMING "MANHUNT" (1941)
DIRECTED BY Fritz LANG

MILLER WAS ACKNOWLEDGED AS "THE MASTER" BY HIS PEERS AMONG CAMERAMEN.

FILMING "HOW GREEN WAS MY VALLEY" (1941) WITH JOHN FORD DIRECTING.



ARTHUR C. MILLER WON THREE ACADEMY AWARDS FOR HIS WORK AND WAS PRESIDENT OF THE AMERICAN SOCIETY OF CINEMATOGRAPHERS FROM 1954-1956.

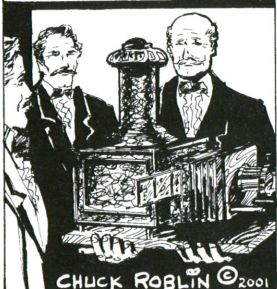


Next Month

MAX AND EMIL SKLADANOWSKY'S FATHER WAS A MAGIC LANTERNIST.



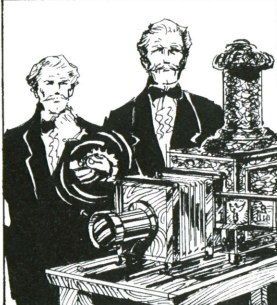
UPON RETIREMENT, HE BEQUEATHS HIS BUSINESS TO THE TWO YOUNG MEN.



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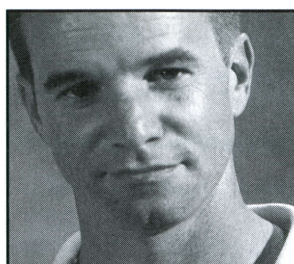
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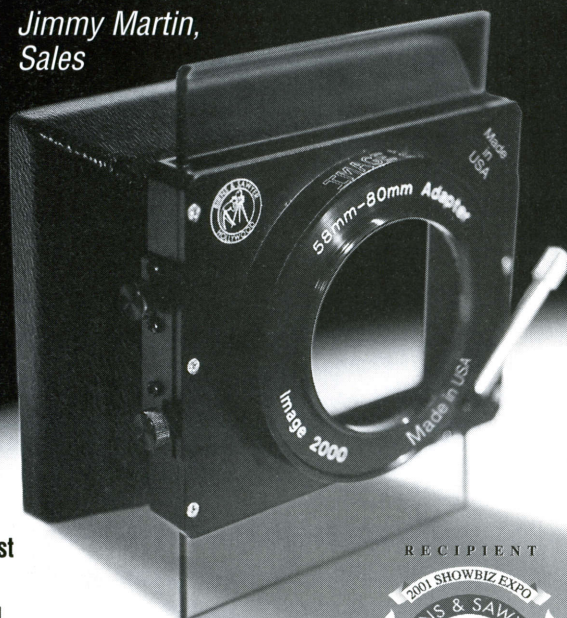
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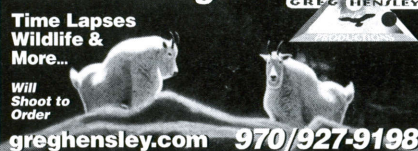
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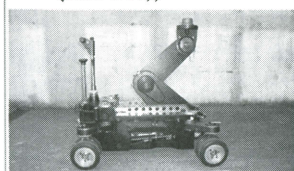
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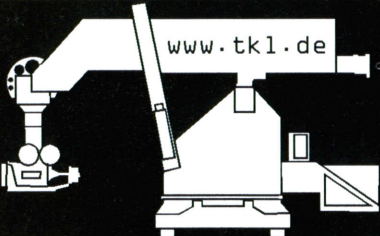
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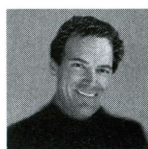
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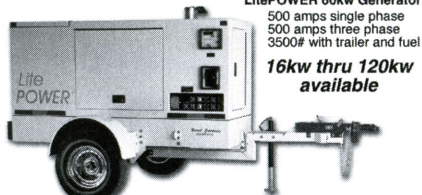
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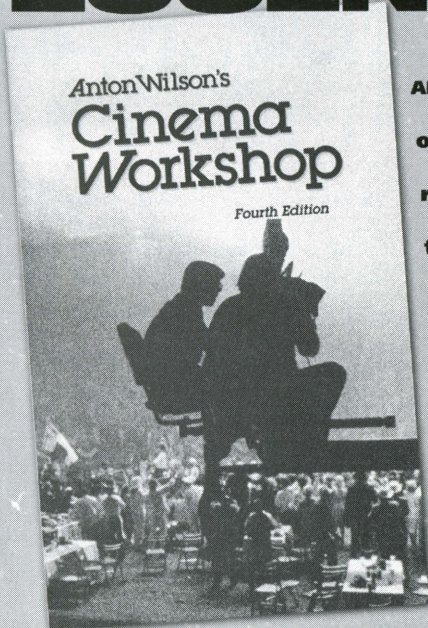
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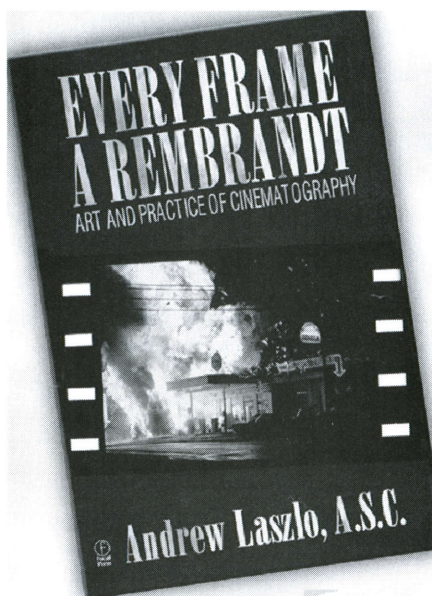
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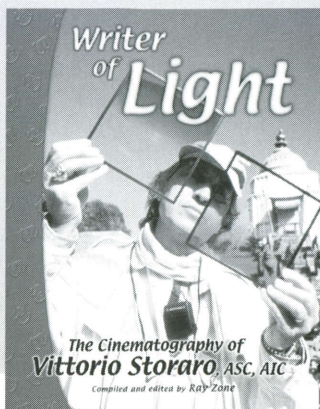
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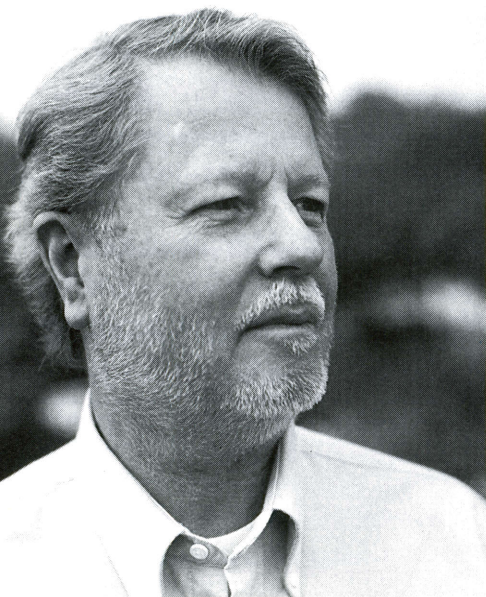
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From the Clubhouse



Membership Grows by Two

Bill Neil and **Bill Roe** have recently joined the ASC membership ranks.



Visual-effects director of photography **Bill Neil** has worked in the visual-effects field for over 20 years, beginning as a camera assistant at Industrial Light & Magic in 1979.

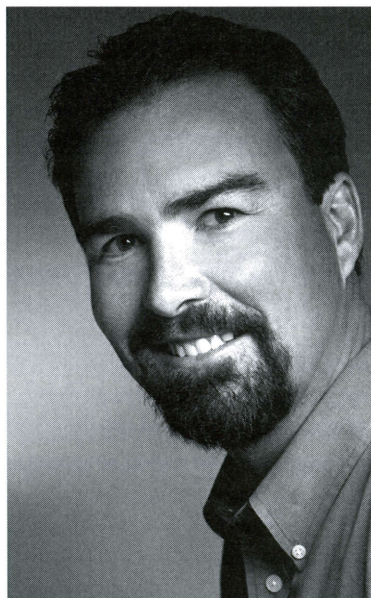
While studying art in Southern California during the mid-1960s, Neil seized the opportunity to work as a production assistant on Francis Ford Coppola's 1969 film *The Rain People*. That experience began, as he puts it, his "lifelong love affair with moviemaking."

At ILM, he assisted on *The Empire Strikes Back* before becoming a visual-effects camera operator on *Return of the Jedi*, *Poltergeist* and *Raiders of the Lost Ark*. He left ILM to become the effects camera operator on *The Right Stuff*.

In 1983, Neil joined Richard Edlund, ASC's new visual-effects company Boss Film Studios, where he operated on *2010*. Neil's next film,

Ghostbusters, marked his first credit as visual-effects director of photography, and the film's visual effects earned an Academy Award nomination. He has served as the effects cinematographer on numerous films, including *Big Trouble in Little China* (see AC June '86); *Poltergeist II* (AC April '87), which received an Academy Award nomination; *Fright Night*; *Die Hard*; *The Abyss*; *Ghost*; *Dick Tracy*, and *Bram Stoker's Dracula*.

Neil has since gone on to supervising work on *The Fifth Element* (AC May '97) as supervising visual-effects director of photography; he assisted director Luc Besson and cinematographer Thierry Arbogast, AFC, who were shooting all the plates, with technical post issues. He also served as the visual-effects supervisor on the James Bond adventure *Tomorrow Never Dies* and the children's film *Thomas and the Magic Railroad*.



Bill Roe steadily worked his way up through the camera department ranks, beginning in 1978 as a loader for Owen Roizman, ASC on *Sgt. Pepper's*

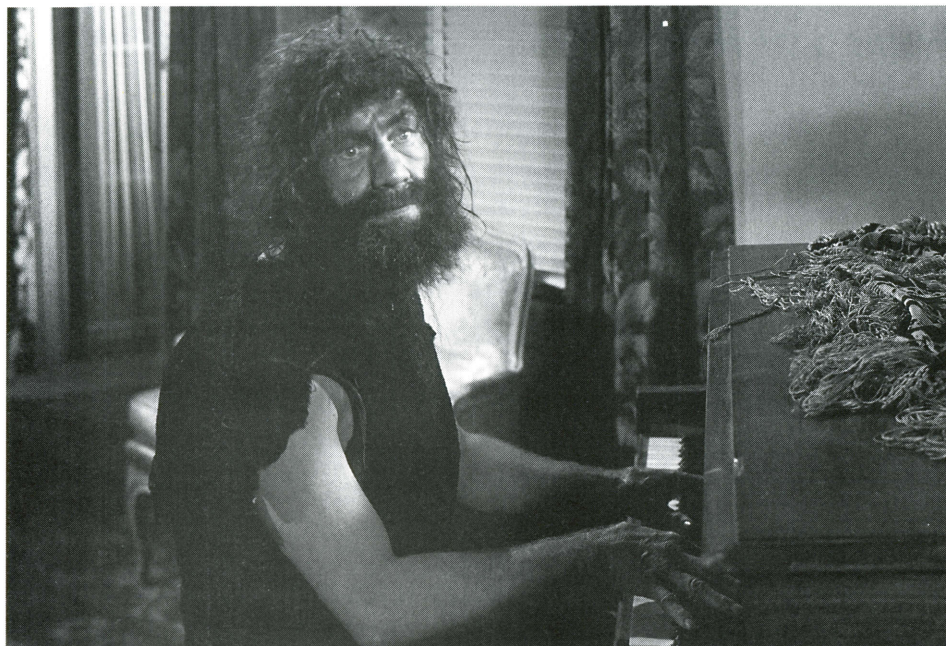
Lonely Hearts Club Band. His next step was assisting for directors of photography Michael Chapman, ASC (on *The Lost Boys*) and current ASC president Victor J. Kemper, ASC (on *Secret Admirer* and *Pee-wee's Big Adventure*, among others). Naturally, he was elevated to camera operator on such films as *Kindergarten Cop*, *Die Hard 2*, *The Indian in the Cupboard*, *Space Jam*, *Primal Fear* and *Wyatt Earp*; the latter film reunited him with Roizman, his earliest mentor. "Owen was always very encouraging," Roe recalls. "He would sit down with me and explain exactly what he was doing in his photography and why."

Roe's first director of photography credit was the 1997 telefilm *Detention: Siege at Johnson High*—thanks to its director, Michael Watkins, ASC. Roe had operated for Watkins on the 1993 feature *Heart and Souls*. When Watkins began taking on producer responsibilities, he took Roe along as a key crew component, first to *Brooklyn South* in 1997, and then to *The X-Files* in 1998.

As cinematographer on the cutting-edge show *The X-Files*, Roe's work has reaped many accolades. He received back-to-back ASC Outstanding Achievement Awards for the episodes "Drive" in 1998 (AC May '99) and "Agua Mala" in 1999 (AC May '00). In 2000 he was also nominated for an Emmy for the episode "The Unnatural," directed by one of the show's stars, David Duchovny. Early this year he earned another ASC Award nomination for the episode "Patience" (AC May '01).

Between *X-Files* seasons, Roe has photographed the feature *Where the Truth Lies* and the telefilm *Second Honeymoon*. ■

WRAP SHOT



The prehistoric Ape Man (Frank Moran) plays a sensitive rendition of Beethoven's "Moonlight Sonata" in *Return of the Ape Man*.

It wasn't a man, it was like a big ape!" exclaims a cop in the 1944 Monogram programmer *Return of the Ape Man*. The flatfoot is referring to a prehistoric man embedded in a glacier that the mad professor Dexter (played by Bela Lugosi) defrosts in an attempt to wreak havoc on the curiously minimal surroundings of the contemporary world.

The insane professor takes a blowtorch to the solid block of ice brought back from "foreign lands on a strange expedition," thereby revealing the unkempt actor Frank Moran as "a perfect specimen of pithecanthropus, neither man nor ape." Lugosi is assisted in the film by the ubiquitous John Carradine as Professor John Gilmore, whom Dexter later paralyzes with electricity in order to transplant part of Gilmore's brain "into the skull of that prehistoric creature." Eventually we are treated to the rare sight of this apelike creature playing a sensitive rendition of "Moonlight Sonata" on the piano, as Gilmore's cultivated brain expresses itself through the hairy hands of the prehistoric man.

This 60-minute low-budget horror quickie is one of hundreds produced by

Sam Katzman through the Banner/Monogram Studios. The prolific Philip E. Rosen directed it over the course of about seven days. Rosen was the very first president of the American Society of Cinematographers, serving from 1918 to 1921, but his legacy doesn't stop there.

Born in Marienburg, Russia, in 1888, Rosen began his career in motion pictures in 1912, as a cinematographer for Thomas Edison. By 1913, Rosen and fellow cameraman Rudolph Berquist had formed the Cinema Camera Club in New York to maintain professional standards and gain artistic recognition for cameramen. For three years, Rosen served as president of the club, which was to include only cinematographers whose work and character were beyond question. But Rosen was unable to carry out his ideals because it would have meant the elimination of a number of members for "incapability." In the meantime, Rosen traveled west to "the coast."

On the night of December 21, 1918, 10 well-established Hollywood cameramen (including Rosen, Victor Milner, Guy Wilkie, Joe August and William Foster) met at Foster's home to

discuss the formation of a society of cameramen whose work and names would represent the highest achievements in the art of motion-picture photography. The society was to conduct itself in a manner that would make membership a great honor.

The idea for this society originated with Rosen. The cameramen present at the meeting agreed that the society would be known as the American Society of Cinematographers, and that the official motto would be "Loyalty, Progress, Art." After formation of the ASC, Rosen stayed very busy as a cameraman and filmed many features up to 1920, including *The Miracle Man* (1919) with Lon Chaney Sr.

By 1919 Rosen had begun to direct feature films, and he undertook that vocation fulltime in 1920 by directing six full-length features that year alone. Rosen had a sure hand as a director and a real flair for Westerns and thrillers. By the time he directed *Return of the Ape Man* in 1944, he had helmed more than 130 feature films.

In their 1999 book *Forgotten Horrors*, film historians George Turner and Michael Price wrote that "Rosen seemed as comfortable and innovative on Poverty Row during the Depression years as he had been at the majors during the silent era."

At the exciting conclusion of *Return of the Ape Man*, the prehistoric creature abducts Gilmore's daughter. A clever use of the Monogram lot is made at this point, as the caveman flees with his captive across a catwalk and backstage into a cluttered prop room before arriving back at Dexter's lab. Soon the lab is set ablaze amid a shower of electrical sparks, the girl is rescued, and the ape man expires in the flames. "This is one time I hope the fire department lets it get a good start," says a cop watching the blaze. One thing's for certain: Rosen got the ASC off to a good start.

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